CMHC
Canada Mortgage and Housing Corporation

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Société canadienne d'hypothèques et de logement

Executive Summary

Rent Controls with Exemptions

Canada

Canada Mortgage and Housing Corporation, the Federal Government's housing agency, is responsible for administering the National Housing Act.

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Executive Summary

RENT CONTROL WITH EXEMPTIONS

Prepared for
The Research Division
Policy Development and Research Sector

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Abstract

RENT CONTROLS WITH EXEMPTIONS

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This paper examines the effects of rent controls which exempt new construction. A model of the controlled and uncontrolled rental markets is developed, and compared to the market which would have existed in the absence of controls. Rents in the uncontrolled market are shown to depend on the process rationing the controlled stock and on builders' expectations about whether controls will be extended to newly constructed units. The model predicts that uncontrolled rents will be higher than controlled rents, that uncontrolled rents will be higher than rents in the absence of controls, and that the households most likely to be rationed into the uncontrolled market are new entrants to the community, newly formed households, households with children and young households. These predictions are compared to the empirical evidence taken from a special survey, conducted in November 1982, of the controlled and uncontrolled housing markets in Toronto. Hedonic price techniques are used to develop indices of uncontrolled rents relative to controlled rents for standardized sets of housing characteristics. The empirical evidence supports the predictions of the model.

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The study from which this summary was made is available in English from:

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The usual analysis of rent controls assumes that all rental housing is controlled. However, most control regimes provide exemptions. Some regimes exempt units when they are vacated, some exempt units which are renovated, some exempt high rent units and almost all regimes exempt units built after controls are imposed. The purpose of this paper is to remedy a deficiency of the usual analysis by explicitly dealing with the exemption for new units. A model of a rental housing market is developed in which controls with a new unit exemption are imposed. The model yields a number of predictions which are tested against data from the Toronto Census Metropolitan Area (CMA) housing market. The paper is positive in orientation - explaining and measuring the effects of rent control, with no attempt to establish the objectives of rent control or to assess whether the objectives are achieved.

The paper is divided into four parts. The first sets out the model of the controlled and uncontrolled markets under a regime of rent controls with a new unit exemption. This provides the theoretical framework to structure the subsequent empirical work. The model establishes the rent (and quantity exchanged) in the controlled and uncontrolled markets and in the market which would have existed in the absence of controls. The theory predicts that uncontrolled rents will be higher than controlled rents, that uncontrolled rents will be higher than rents would have been in the absence of controls and that the households most likely to be rationed into the uncontrolled market are newly formed households, new entrants to the community, households with children and young households.

The remaining three parts examine the empirical evidence on these three principal predictions of the model. The first part studies the Toronto housing market, mainly using data taken from a special survey of units and tenants conducted in November 1982. In order to establish whether rents are higher

in the uncontrolled sector, one cannot simply compare nominal rents in the two markets; one must establish what the rent of a similar unit would be in the two sectors. This is done using hedonic pricing techniques, and it is shown that quality adjusted rents are higher in the uncontrolled market. The second part explores what the increase in rents would have been in Metropolitan Toronto in the absence of controls and concludes that uncontrolled rents are likely higher than rents would have been in the absence of controls. The final part presents data on tenants in the two markets in an attempt to discern what sorts of households are rationed into the uncontrolled market. There are slightly more new households, new entrants, young households and households with children in the uncontrolled market but there was also considerable turnover in the controlled market making any rationing mechanism difficult to identify.

Pricing Under Controls With Exemptions

Rent controls with a new unit exemption create two rental housing markets: a controlled market made up of buildings constructed before controls are imposed and an uncontrolled market made up of buildings constructed after controls are imposed. The two markets are very interrelated.

In the uncontrolled market, the rent and quantity produced depend upon how much demand from the controlled market 'spills over' into the uncontrolled market and upon how the existence of controls influences the supply of new units (even though these units are exempt). Both the demand side and the supply side of the uncontrolled market are considered in more detail in the following paragraphs.

Consider first the demand for uncontrolled housing. When controls are imposed, existing tenants occupy the controlled stock and vacancy rates are low. Newly formed households or new entrants to the community are thus forced into the uncontrolled market. The more such households there are, the greater the demand for uncontrolled housing.

On the supply side, controls are likely to affect the decisions of builders. Builders will attach a higher probability than before to the possibility that controls will be imposed on their new units. Expected future rents will decline; and at any rent level less new rental housing will be built than if controls had not been imposed. The supply curve shifts up and to the left. Rents in the uncontrolled market will be higher than in the controlled market.

Of course households originally in the controlled market may also shift into the uncontrolled market. These households face a choice. Vacant controlled units are hard to find so basically if the household is to enjoy the low controlled rent it must remain in its existing unit. If it desires a

a different size or quality of apartment, it can move into the uncontrolled market but there it faces a higher rent. Households with a strong desire to change their accommodation - perhaps because of an increase in income, or an increase in family size, or a change in job location - will tend to enter the uncontrolled market. Rent controls tend to reduce the maintenance of controlled dwellings. As maintenance is reduced, more households will enter the uncontrolled market.

Once one household shifts into the uncontrolled market the choices facing the remaining households in the controlled market change slightly. For those households which consumed less housing than the departing household, there is now an opportunity to remain in the controlled market, increasing their housing consumption while still enjoying the low rent. The final allocation of households between the two markets will depend upon the sequence of departures and the sequence of moves in the controlled market. Because there is excess demand in the controlled market, landlords can discriminate among prospective tenants at relatively little cost to themselves. They will likely tend to favour higher income tenants, tenants without children or tenants who they feel will remain a long time. Lower income tenants, families with children and young couples (who are more likely to move) will be rationed into the uncontrolled market.

The model yields three important predictions. The first is that rents in the uncontrolled market will be higher than rents in the controlled market. The second is that uncontrolled rents will be higher than rents would have been in the absence of controls. Together these imply that there are important differences among tenants and among landlords under a regime of rent controls with exemptions. Some tenants may be made worse off by the imposition of

controls. Some landlords (or owners of factors used in producing new housing) may actually be better off. The standard analysis of the incidence of controls must evidently be reassessed. The third prediction relates to what sorts of households will be rationed into the uncontrolled market and so be forced to pay the higher rent. The analysis suggests new entrants and newly formed households will tend to be forced into the uncontrolled market; as well, landlords of controlled stock will tend to favour higher income households, households without children and older households. This greater likelihood of high income households remaining in the controlled market may be offset by a high income elasticity of demand for newness.

Controlled and Uncontrolled Rents Compared

The first prediction of the model is that rents in the uncontrolled sector will be higher than rents in the controlled. This is scarcely a surprising prediction, but not one which can be easily verified. Observed rents in the two sectors could be compared but this would not test the prediction of the model. Although observed uncontrolled rents are higher than observed controlled rents, this may be because units in the uncontrolled sector have more desirable characteristics. The uncontrolled units are newer under controls with a new unit exemption, and they may be larger, or better designed or provide more facilities or be better located and so on. The theory of hedonic pricing offers a way to deal with this problem.

The theory of hedonic pricing assumes that rent can be broken down into payments for certain characteristics - for example floor space, age, parking facilities, location and so on. These payments are the product of the price of the characteristic times the amount of the characteristic - for example $3 per square foot times the number of square feet in the apartment. Data on the rent and characteristics of a group of apartments can be used to estimate the prices of characteristics - hedonic prices. Once the prices of characteristics in the controlled and uncontrolled markets are known, then one can compare the rent of similar quality dwelling units in the two markets.

Hedonic prices of characteristics are estimated in the paper for the controlled and uncontrolled markets of the Toronto CMA using data from a special survey conducted in the fall of 1982 by the Institute for Behavioral Research, Survey Research Centre, at York University, Toronto. The actual average rent in the controlled sector was $358 and the average uncontrolled rent was $530. Rents were 48 per cent higher in the uncontrolled sector. Some of this

difference is because the uncontrolled units were newer and of higher quality. The hedonic price analysis reveals that after allowing for quality rents were 23 per cent higher in the uncontrolled market. Just under one half the difference in nominal rents is attributable to rent controls; while the remainder of the difference is attributable to differences in characteristics (ie., in quality).

Thus the data strongly support the prediction that rents in the uncontrolled market will be higher than in the controlled market.

Rents in the Absence of Controls

The second prediction of the model is that the equilibrium rent in the uncontrolled sector will be higher than the equilibrium rent in the absence of controls. Although intuitively such a prediction should seem relatively easy to test, in actuality a precise test is not possible in the Toronto rental housing market. The paper relies on an informal or impressionistic approach.

The rent in the absence of controls is estimated in a two step procedure. First, the relationship between the CPI rent index and the full CPI price index is examined in the pre-control period. Between 1961 and 1975, the rental component rose only 40 per cent of the increase in the overall CPI. This is attributed to two factors. The CPI rent component understates the true rent increase; when corrected it is estimated that rents rose 67 per cent of the CPI increase. The remaining difference is attributed to a decline in the user cost of homeownership over the period due to expectations of increased inflation which caused people to shift from rental to ownership tenure.

The second step examines the control period 1975-1983. Over the control period the CPI rose 98.8 per cent. Using the sorts of adjustments explained for the pre-control period it is estimated that rents in the absence of controls would have risen 90.6 per cent.

There are no consistent data which measure the increase in uncontrolled rents. The paper generates an estimate. Controlled rents rose 69.6 per cent over the controlled period; the hedonic indices of the previous section indicate that uncontrolled rents are 23 per cent higher than controlled rents; therefore, uncontrolled rents are estimated to have risen 108 per cent.

The estimated increase in the absence of controls is less than the increase in uncontrolled rents. Although little confidence should be placed

in the specific index numbers computed, the general conclusion is quite robust because the various assumptions are chosen to upwardly bias the index of rents in the absence of controls and downwardly bias the index of uncontrolled rents. The data thus support the second prediction of the model that uncontrolled rents under a rent control regime with exemptions will be higher than they would have been in the absence of controls.

Rationing of Controlled Housing

A critical part of analysing how rents in the controlled and uncontrolled sectors are established is the mechanism of rationing the controlled housing stock. This helps to establish how much excess demand spills over into the uncontrolled market. In order to test the rationing hypotheses of the model a complex longitudinal survey much beyond the scope of this research is required. Consequently, the analysis of the various characteristics of the households in the two sectors is somewhat impressionistic. The survey referred to earlier was used to collect data on the socioeconomic characteristics of tenants in the two sectors and data on the turnover of tenants in the two sectors.

The first impression is that there are not major differences between the sectors. Households in the uncontrolled sector tend to be slightly larger and are more likely to have children (although few renters in either market have children). The heads of households in the uncontrolled sector tend to be younger (and are much less likely to be elderly), and are more likely to be male headed and more likely to be married. The greater likelihood of young children, of a younger head of household and of a married head of household all offer some indirect evidence that new or expanded households are more likely to be in the uncontrolled market. The data also give some support for the hypotheses that households with young heads, new entrants and households with children will be rationed out of the controlled market.

The theory pointed in two directions regarding where higher income people would reside. It indicated that, on the one hand, landlords would prefer to ration controlled stock to high income households; but, on the other hand, high income households are more likely than low income households to be able to increase their utility by moving to the uncontrolled sector, and to have a demand for newness. The data suggest the latter factors predominate. Average

income was 22 per cent higher in the uncontrolled sector - but there were many high (and low) income households in both sectors.

The data roughly confirm the predictions of the model but the differences between sectors were not stark. It proved that while turnover was lower in the controlled market, there had been insufficient movement to clearly identify the rationing mechanism.

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Sommaire

La réglementation des loyers et ses dispenses

Canada

La Société canadienne d'hypothèques et de logement, l'organisme du logement du gouvernement du Canada, a pour mandat d'appliquer la Loi nationale sur l'habitation.

Cette loi a pour objet d'aider à améliorer les conditions d'habitation et de vie au Canada. C'est pourquoi ia Société s'intéresse à tout ce qui concerne l'habitation, l'expansion et le développement urbains.

Aux termes de la Partie V de la Loi, le gouvernement du Canada autorise la SCHL à affecter des capitaux à des recherches sur les aspects socio-économiques et techniques du logement et des domaines connexes, et à publier et diffuser les résultats de ces recherches. La SCHL a donc une obligation légale de veiller à ce que tout renseignement de nature à améliorer les conditions d'habitation et de vie soit connu du plus grand nombre possible de personnes ou de groupes de personnes.

La présente publication est l'un des nombreux moyens d'information que la SCHL a produits avec l'aide de capitaux du gouvernement fédéral.

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La réglementation des loyers et ses dispenses

préparé pour
Division de la recherche
Secteur de la recherche et de l'élaboration de propositions
Société canadienne d'hypothèques et de logement

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LA RÉGLEMENTATION DES LOYERS ET SES DISPENSES

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Le présent document porte sur l'étude des conséquences de la réglementation des loyers lorsque les constructions neuves en sont dispensées. Il présente un modèle de marché locatif réglementé et un autre de marché non réglementé, et les compare au marché qui aurait existé en l'absence de réglementation (ou marché libre). Il montre que les loyers du marché non réglementé sont assujettis au processus qui "rationne" le parc de logements réglementés et aux attentes des constructeurs, qui se demandent si la réglementation s'étendra aux habitations neuves. Le modèle permet de constater que les loyers non réglementés seront plus élevés que les loyers réglementés, que ces mêmes loyers seront plus élevés que ceux d'un marché libre et que les ménages les plus susceptibles de devoir pénétrer sur le marché non réglementé par suite du rationnement dans l'autre secteur sont les nouveaux arrivants dans la collectivité, les ménages qui viennent de se former, les ménages avec enfants et les jeunes ménages. Ces conclusions sont ensuite comparées aux résultats empiriques d'une enquête spéciale réalisée en novembre 1982 sur les marchés des loyers réglementés et non réglementés de Toronto. On a fait appel à des techniques hédonistiques de calcul des prix pour déterminer les indices des loyers non réglementés par rapport aux loyers réglementés concernant des séries normalisées de caractéristiques de logement. Les données empiriques confirment les prédictions du modèle.

Cette étude a été financée par la Société canadienne d'hypothèques et de logement, mais elle n'exprime que l'opinion personnelle des auteurs et n'engage aucunement la responsabilité de la Société.

L'étude résumée dans le présent sommaire est disponible en anglais:

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Habituellement, une analyse de la réglementation des loyers prend pour postulat que l'ensemble des logements locatifs est soumis à cette réglementation. Cependant, la plupart des régimes de réglementation prévoient des dispenses. Certains exemptent les habitations qui deviennent libres, d'autres le font pour celles qui sont rénovées, d'autres encore quand le loyer en est élevé, et presque tous les régimes appliquent cette dispense aux logements construits après la mise en place de la réglementation. Le présent document a pour but de combler une lacune de l'analyse habituelle, en étudiant expressément la dispense qui concerne les logements neufs. On a mis au point un modèle de marché locatif auquel est appliquée une réglementation des loyers avec dispense pour les logements neufs. Ce modèle fournit un certain nombre de constatations, qui sont rapprochées des données du marché du logement de la région métropolitaine de recensement (RMR) de Toronto. Le document examine le problème sous un angle positif, expliquant et mesurant les effets de la réglementation des loyers, sans chercher à préciser les objectifs de cette réglementation, ni à savoir si ces objectifs ont été atteints.

Le document se compose de quatre parties. La première décrit le modèle des marchés réglementé et non réglementé, dans le contexte d'un régime de réglementation des loyers avec dispense pour les logements neufs. Nous avons ainsi le cadre théorique permettant de structurer les recherches empiriques qui suivent.

Dans le modèle, le loyer (et la quantité échangée) est fixé pour les deux marchés, et pour celui qui aurait existé en l'absence de réglementation. On constate en théorie que les loyers non réglementés auront tendance à être plus élevés que les loyers réglementés, que ces mêmes loyers seront plus élevés que les loyers du marché libre et que les ménages les plus susceptibles de devoir pénétrer sur le marché non réglementé par suite du rationnement dans l'autre secteur sont les nouveaux arrivants dans la collectivité, les ménages qui viennent de se former, les ménages avec enfants et les jeunes ménages.

Les trois autres parties étudient les résultats empiriques obtenus à partir des trois principales constatations fournies par le modèle. La première partie examine le marché du logement de Toronto, en se fondant essentiellement sur les données d'une enquête spéciale sur les logements et les locataires, menée en novembre 1982. Pour pouvoir déterminer si oui ou non les loyers sont plus élevés dans le secteur non réglementé, il ne suffit pas de comparer les loyers nominaux des deux marchés; il faut établir le loyer éventuel d'un logement identique dans les deux secteurs. On se sert pour cela de techniques hédonistiques de fixation des prix, et l'on voit que les loyers calculés en fonction de la qualité sont plus élevés sur le marché non réglementé. La deuxième partie explore l'influence qu'aurait eue l'absence de réglementation sur les loyers dans la région de Toronto et conclut que les loyers non réglementés sont vraisemblablement

plus élevés que l'auraient été ceux d'un marché libre. La dernière partie, qui contient des données sur les locataires des deux marchés, cherche à discerner quels types de ménages sont contraints de pénétrer sur le marché non réglementé. On trouve, sur le marché non réglementé, légèrement plus de nouveaux ménages, de nouveaux arrivants, de jeunes ménages et de ménages avec enfants, mais le va-et-vient, sur le marché réglementé, a été considérable, ce qui n'a pas permis de faire ressortir de façon valable l'existence d'un mécanisme de rationnement.

La fixation des prix sur un marché réglementé avec dispenses

La réglementation des loyers avec dispense pour logements neufs engendre deux sortes de marché: un marché réglementé constitué d'immeubles bâtis avant la réglementation et un marché non réglementé composé de bâtiments construits par la suite. Les deux types de marché sont très interdépendants.

Sur le marché non réglementé, le niveau du loyer et la quantité de logements produits dépendent de l'ampleur du "débordement" de la demande du marché réglementé vers le marché qui ne l'est pas, et de la façon dont l'existence de la réglementation influe sur l'offre de logements neufs (même si ces derniers n'y sont pas soumis). Nous allons examiner de plus près les deux pôles du marché non réglementé (offre et demande) dans les paragraphes qui suivent.

Voyons tout d'abord la demande de logements non réglementés. En situation de réglementation, les locataires en place occupent le parc de logements à loyer réglementé et les taux d'inoccupation sont faibles. Les ménages qui viennent de se former ou les nouveaux arrivants dans la collectivité sont donc contraints de se tourner vers le marché non réglementé. Plus il y a de pareils ménages, plus la demande de logements non soumis à la réglementation est élevée.

Sur le plan de l'offre, la réglementation risque d'avoir des répercussions sur les décisions des constructeurs, ces derniers estimant plus forte qu'auparavant la probabilité de voir leurs logements neufs frappés par cette mesure. Les loyers futurs qu'ils espèrent obtenir baisseront; et quel que soit le niveau du loyer, la construction de logements locatifs neufs sera moins importante que si la réglementation n'avait pas été imposée. La courbe de l'offre se déplacera vers le haut et vers la gauche et les loyers du marché non réglementé seront plus élevés que ceux du marché réglementé.

Il se peut, bien entendu, que des ménages faisant partie, au début, du marché réglementé pénètrent sur le marché non réglementé. Ils doivent choisir. Les logements réglementés inoccupés étant rares, s'ils veulent profiter du bas loyer réglementé, il leur faudra rester dans le logement qu'ils occupent. S'ils désirent habiter dans un logement de taille ou de qualité différentes, ils pourront le chercher sur le marché

non réglementé, mais en sachant que le loyer y sera plus élevé. Les ménages qui souhaitent ardemment changer de logement, après une augmentation de revenu, une augmentation de la famille ou un déplacement professionnel, auront tendance à pénétrer sur le marché non réglementé. La réglementation a tendance à abaisser la qualité de l'entretien des logements réglementés, et par voie de conséquence, à pousser un plus grand nombre de ménages vers le marché non réglementé.

Lorsque des ménages passent au marché non réglementé, les choix dont disposent ceux qui demeurent sur le marché réglementé se modifient légèrement. Pour les ménages qui habitaient un logement moins spacieux que celui des ménages partis, il existe maintenant une possibilité de rester dans le marché réglementé et d'accroître leur bien-être, tout en conservant l'avantage du bas loyer. La répartition finale des ménages entre les deux marchés dépendra de l'ordre successif des départs et des déménagements à l'intérieur du marché réglementé. Étant donné que, sur ce dernier, la demande est pléthorique, les propriétaires pourront, à très peu de frais, se montrer regardants dans leur choix de locataires. Ils auront tendance à préférer des locataires à revenu plus élevé, ou sans enfants, ou encore des locataires qu'ils pensent conserver longtemps. Les locataires à revenu inférieur, les familles avec enfants et les jeunes couples (plus susceptibles de déménager), seront contraints, par ce rationnement, de pénétrer sur le marché non réglementé.

Le modèle produit trois constatations importantes. Premièrement, les loyers du marché non réglementé seront plus élevés que ceux du marché réglementé. Deuxièmement, ces mêmes loyers seront également plus élevés que les loyers libres d'un marché sans réglementation aucune. Ces deux éléments signifient qu'il y a des différences importantes entre les locataires et entre les propriétaires, dans un régime de réglementation des loyers avec dispenses. L'application d'une réglementation peut placer certains locataires en plus mauvaise situation qu'auparavant. Certains propriétaires-bailleurs (ou propriétaires de facteurs utilisés pour la production de logements neufs) peuvent y gagner. De toute évidence, il faut réévaluer l'analyse classique des conséquences de la réglementation. La troisième constatation porte sur le type de ménage qui va être contraint de pénétrer sur le marché non réglementé, et donc de payer un loyer élevé. L'analyse montre que les nouveaux arrivants et les ménages qui viennent de se former auront tendance à être forcés d'entrer sur ce marché; de même, les propriétaires de logements à loyer réglementé tendront à préférer les ménages à revenu plus élevé, ceux qui n'ont pas d'enfants ou les ménages de longue date. La probabilité plus grande de voir les ménages à revenu élevé rester sur le marché réglementé peut être contrebalancée par l'élasticité de la demande de logements neufs dans cette même catégorie de revenus.

Comparaison des loyers réglementés et non réglementés

Selon la première constatation fournie par le modèle, les loyers du secteur non réglementé seront plus élevés que ceux du secteur réglementé. Cette observation est à peine surprenante, mais elle est loin d'être facile à vérifier. On pourrait comparer les loyers observés dans les deux secteurs, mais cela ne permettrait pas de contrôler la prédiction du modèle. Bien que, selon les observations, les loyers non réglementés soient plus élevés que les loyers réglementés, on peut prétendre que c'est parce que les logements du secteur non réglementé présentent, en plus grand nombre, les caractéristiques recherchées. Les logements non réglementés sont plus récents dans un régime de réglementation avec dispense pour les logements neufs, et ils sont éventuellement plus grands, ou mieux conçus, mieux équipés, mieux situés, etc. La théorie des prix hédonistiques offre une façon de résoudre ce problème.

Cette théorie suppose que le loyer peut être divisé en portions correspondant au paiement de certaines caractéristiques - par exemple la superficie au sol, l'ancienneté, le stationnement, l'emplacement, et ainsi de suite. Ces portions de paiement sont égales au prix de la caractéristique multiplié par le montant de celle-ci - par exemple 3 $ le pied carré multiplié par le nombre de pieds carrés de surface de l'appartement. On peut utiliser les données du loyer et des caractéristiques d'un groupe d'appartements pour évaluer le prix

de ces caractéristiques, c'est à dire, leur prix hédonistique. Lorsqu'on connaît ces prix pour les secteurs réglementé et non réglementé du marché, on peut alors comparer le loyer de logements de même qualité dans ces deux secteurs.

L'évaluation des prix hédonistiques des caractéristiques dont nous venons de parler est basée, pour les marchés réglementé et non réglementé de la région métropolitaine de recensement de Toronto, sur les données d'une enquête spéciale menée à l'automne 1982 par l'Institute of Behavioral Research, du Survey Research Centre de l'Université York à Toronto. Le loyer moyen réel, dans le secteur réglementé, était de 358 $ et, dans le secteur non réglementé, de 530 $, soit une différence en plus de 48 % dans le second secteur. En partie, cet écart vient de ce que les logements du secteur non réglementé étaient plus récents et de meilleure qualité. L'analyse des prix hédonistiques montre que, compte tenu de la qualité, les loyers étaient de 23 % plus élevés sur le marché non réglementé. Pour ce qui est des loyers nominaux, la disparité tient, pour à peine la moitié, à la réglementation; pour le reste, elle est attribuable aux différences des caractéristiques (au plan de la qualité, par ex.).

Par conséquent, les données confirment nettement la constatation voulant que les loyers du marché non réglementé soient plus élevés que ceux du marché réglementé.

Les loyers sur un marché libre

Selon la deuxième constatation du modèle, le loyer d'équilibre du secteur non réglementé sera plus élevé que le même loyer sur un marché libre. Alors qu'en théorie, cette observation devrait être relativement facile à vérifier, dans la pratique, il n'est pas possible de le faire avec précision sur le marché locatif de Toronto. Notre analyse adoptera donc une approche non conventionnelle, ou fondée sur des impressions.

Sur un marché libre, le loyer est évalué selon un processus en deux temps. Premièrement, on examine le rapport entre l'indice des loyers de l'Indice des prix à la consommation (IPC) et le plein Indice des prix à la consommation au cours de la période qui a précédé la réglementation. Entre 1961 et 1975, la composante loyer n'a constitué que 40 % de la hausse de l'IPC global, et cela pour deux raisons. La composante loyer de l'IPC sous-évaluait la hausse réelle des loyers; après correction, on peut estimer cette dernière à 67 % de la hausse de l'IPC. La différence restante correspond au recul du coût de l'accession à la propriété pour l'usager, pendant la période à l'étude, parce que celui-ci, craignant la montée inflationniste, était passé du mode d'occupation locatif à celui de la propriété.

Dans un second temps, on examine la période 1975-1983. Pendant la période de réglementation, l'IPC a augmenté de 98,8 %. En ayant recours aux correctifs appliqués pour l'examen de la période précédant la réglementation, on estime que sur un marché libre les loyers auraient augmenté de 90,6 %.

Nous ne disposons pas de données suivies pour mesurer la hausse des loyers non réglementés. Notre étude produit une estimation. Les loyers réglementés ont augmenté de 69,6 % durant la période de réglementation; les indices hédonistiques donnés à la section qui précède montrent que les loyers non réglementés sont de 23 pour cent supérieurs aux autres; par conséquent, on estime que les loyers non réglementés ont augmenté de 108 %.

La hausse probable des loyers d'un marché entièrement libre serait donc inférieure à celle des loyers non réglementés. Bien que les pourcentages utilisés pour illustrer la démonstration présentent peu de fiabilité, la conclusion générale est très ferme, car les diverses hypothèses ont été choisies de façon à influencer en hausse l'indice des loyers en situation de marché libre et d'influencer en baisse l'indice des loyers non réglementés. Les données confirment donc la seconde constatation du modèle, qui voulait que, dans un régime de réglementation, les loyers non réglementés soient plus élevés qu'ils l'auraient été en situation de marché libre.

Le rationnement des logements à loyer réglementé

Le mécanime de rationnement du parc de logements à loyer réglementé constitue un élément essentiel de l'analyse permettant d'observer la façon dont les loyers des secteurs réglementé et non réglementé sont fixés. Il contribue à déterminer l'importance du débordement de la demande vers le marché non réglementé. Si l'on voulait vérifier les hypothèses de rationnement du modèle, il faudrait entreprendre une enquête longitudinale complexe, qui dépasserait de très loin le cadre de notre recherche. En conséquence, l'analyse des diverses caractéristiques des ménages observés dans les deux secteurs fait plutôt appel à des impressions. Nous avons utilisé l'enquête mentionnée précédemment pour rassembler des données sur les caractéristiques socio-économiques des locataires des deux secteurs et sur leur va-et-vient entre ces mêmes secteurs.

La première impression est qu'il n'existe pas de grandes différences entre les secteurs. Dans le secteur non réglementé, les ménages ont tendance à être un peu plus grands et sont plus susceptibles d'avoir des enfants (bien que, sur chaque marché, rares sont les locataires ayant des enfants). Dans ce même secteur, les chefs de ménage tendent à être plus jeunes (et sont nettement moins susceptibles d'être âgés), plus souvent masculins et sont plus susceptibles d'être mariés. Les jeunes enfants, la jeunesse du chef de ménage et le fait qu'il soit marié, sont tous des éléments qui montrent, d'une manière

indirecte, que les nouveaux ménages, ou ceux qui grossissent, se trouveront plus probablement sur le marché non réglementé. Ces données confirment aussi en partie les hypothèses voulant que les ménages dont le chef est jeune, les nouveaux arrivants et les ménages avec enfants soient contraints de quitter le marché réglementé, faute de logements leur convenant.

La théorie proposait deux directions en ce qui concerne le lieu de résidence des ménages à revenu élevé. Elle indiquait d'un côté que les propriétaires-bailleurs préféreront réserver le parc de logements à loyer réglementé à cette catégorie de ménages; mais, de l'autre côté, ces ménages sont plus portés que les ménages à faible revenu à accroître leur utilité en pénétrant sur le marché non réglementé, et de susciter une demande de logements neufs. Les données suggèrent que ce sont ces derniers facteurs qui prédominent. Le revenu moyen était de 22 % plus élevé dans le secteur non réglementé - mais il y avait un grand nombre de ménages à revenu élevé (et faible) dans les deux secteurs.

Les données confirment grosso modo les constatations du modèle, mais les différences entre les secteurs n'étaient pas flagrantes. Elles ont révélé que même si le va-et-vient était inférieur sur le marché réglementé, il n'était pas suffisamment apparent pour faire ressortir le mécanisme de rationnement.

Rent Controls with Exemptions
by George Fallis February 1984

RENT CONTROLS WITH EXEMPTIONS

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February, 1984

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1. INTRODUCTION

Rent controls are surely one of the most controversial government programs of the last few years. As is often the case with controversial programs, the public debate contains much rhetoric and rather less discussion based on sound analysis. Proponents of controls cite the beneficial effects on housing affordability or income distribution or security of tenure, without a precise definition of what these terms mean or a discussion of how generally these goals are held and how much society would be willing to give up to achieve them. Opponents are much more likely to emphasize the undesirable effects of controls on the efficiency of resource allocation, or to argue that controls are too blunt an instrument to use in the pursuit of the goals favoured by proponents.[1] Neither proponents nor opponents usually present an explicit analysis of the effects of controls and when they do it is usually based on the standard treatment of a price control in a market. It is assumed that government sets the price on all of the commodity exchanged at a level below the price which would have existed in the absence of controls. (See the following section for a graphical presentation). This sort of analysis is seriously deficient in a number of respects, several of which are outlined below.

It assumes that government can actually control the rent (price) per unit of housing service. In fact, this is extraordinarily difficult to do. A unit of housing service is a non-observable construct; it is an abstract idea for the purpose of analysis. Most systems of rent control regulate the rent on a dwelling unit but contain provisions for rent reductions if the maintenance level or services to the tenant decline. These declines are hard to identify

or measure. To the extent that rent controls regulate the rent on a dwelling unit and landlords can reduce the number of units of housing service supplied by the dwelling unit, direct control over the price per unit of housing service may be broken and no excess demand may arise.[2]

The usual analysis ignores the possibility that a prospective tenant and either the landlord or the sitting tenant may arrange a side payment of value up to the difference between what the prospective tenant is willing to pay and the controlled rent. Or sitting tenants and the landlord may arrange side payments to secure higher maintenance or to prevent conversion or demolition of the building. Both parties to this arrangement have an incentive to see such side payments. These payments can take many forms. They can be key money, bonuses for sub-letting a controlled unit, or as has been recently seen in Ontario requests that landlord and tenant be permitted to negotiate mutually agreeable rent increases outside the rent review process. To the extent that such side payments occur, the income redistribution of controls is significantly altered and controls may even be non-binding. Cheung (1974) and (1975) discusses these issues and presents a careful case study of rent control in Hong Kong emphasizing how the legislative details of a control regime can significantly alter the effects of the regime.

Probably the most serious deficiency of the usual analysis is the assumption that all rental housing is controlled. Most control regimes provide exemptions. Some exempt units when they are vacated, some exempt units after they undergo a major renovation, some exempt high rent units and almost all regimes exempt units built after the controls are imposed. There are two markets: the controlled and

the uncontrolled. Under rent controls with exemptions some tenants live in controlled units and others in uncontrolled units; some landlords have controls on their rents and others have no controls. The two markets are obviously very interrelated. What determines the demand and supply in each market? In the controlled market, regulations (assumed binding) are imposed on the price of the existing stock. The supply decision essentially involves maintenance (and conversion or demolition) decisions and the supply must be characterized as the provision of housing stocks of various qualities. The economic analysis of markets with quality variations is quite complex (in almost all housing analysis it is assumed there is a homogeneous good called housing services or housing stock). Sweeney (1974a) and (1974b) offers a rigorous beginning which Arnott (1981) has developed to examine the effects of controls on maintenance. In the uncontrolled market, the supply will depend upon the rental price of housing services in both markets, construction costs, the expectations which landlords and developers form about the extension of controls to the exempt sector and the maintenance decisions of uncontrolled landlords. The demands in the two markets are closely connected. The demand for controlled units is based on the usual variables affecting demand, while the demand for uncontrolled units is essentially excess demand from the controlled market which has spilled over into the uncontrolled market. Crucial determinants of how much demand spills over will be the method by which the controlled stock is rationed and the difference in rent between the controlled and the uncontrolled sector.

The purpose of this paper is to remedy one of the deficiencies of the usual analysis by explicitly dealing with the exemption for new units. The paper is positive in orientation - explaining and measuring the effects of rent control with a new unit exemption - with no attempt to establish the objectives of rent control or to assess whether the

objectives are achieved. It is hoped the analysis can contribute to the less rhetoric-filled parts of the public policy debate on rent controls.

The paper is divided into four parts. The first sets out a model of the controlled and uncontrolled markets under a regime of rent controls with a new unit exemption. This provides the theoretical framework to structure the subsequent empirical work. The model establishes the rent (and quantity exchanged) in the controlled and uncontrolled markets and in the market which would have existed in the absence of controls. The theory predicts that uncontrolled rents will be higher than controlled rents, that uncontrolled rents will be higher than rents would have been in the absence of controls and that the households most likely to be rationed into the uncontrolled market are newly formed households, new entrants to the community and households who wish a large increase in the quantity of housing consumed.

The remaining three sections examine the empirical evidence on these three principal predictions of the model. The Metropolitan Toronto housing market is studied, mainly using data taken from a special survey of units and tenants conducted in November 1982. In order to establish whether rents are higher in the uncontrolled sector, one cannot simply compare nominal rents in the two markets; one must establish what the rent of a similar unit would be in the two sectors. This is done in Section 3 using hedonic pricing techniques, and it is shown that quality adjusted rents are higher in the uncontrolled market. Section 4 explores what the increase in rents would have been in Metropolitan Toronto in the absence of controls and concludes that uncontrolled rents are likely higher than rents would have been in the absence of controls. Section 5 presents data on tenants in the two

markets in an attempt to discern what sorts of households are rationed into the uncontrolled market. There are slightly more new households and new entrants in the uncontrolled market but there proves to have been considerable turnover in the controlled market making any rationing mechanism difficult to identify. Section 6 provides concluding comments and a short discussion of directions for further work.

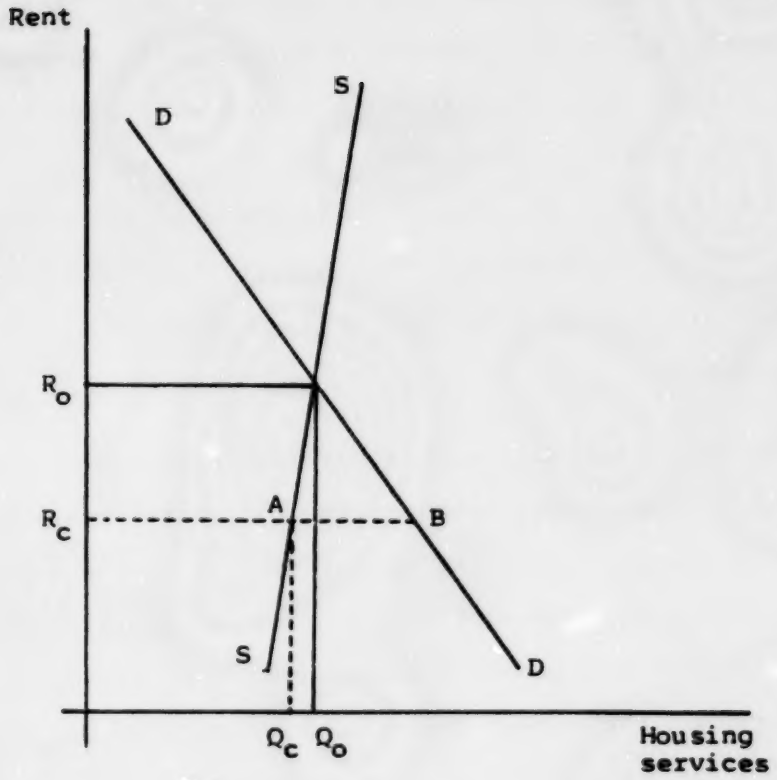
2 PRICING UNDER CONTROLS WITH EXEMPTIONS

The usual sort of analysis of rent controls is some variant, implicit or explicit, of the argument presented in Figure One. It is assumed there is some homogeneous good called housing services and one unit of housing service is produced from one unit of housing stock (so the terms service and stock can be used interchangably). The demand curve for housing services obtained through renting is DD, the supply curve is SS (usually assumed to be quite inelastic in the short or medium run), R_o is the equilibrium rent in the absence of controls and Q_o is the equilibrium stock. Rent controls are imposed which set the price per unit of housing service at R_c below R_o. Under controls, stock falls to Q_c and there is excess demand at price R_c equal to distance AB. It is assumed that the controls permit no exemptions and are permanent. The analysis is partial equilibrium analysis assuming that all other prices remain unchanged and that controls have no effects on other prices. There is no explanation of what happens to the excess demand.

Within its assumptions, the usual analysis is logically correct and does emphasize a fundamental point: rent controls reduce the quantity supplied of housing services. In Figure One, the reduction is shown to be rather slight (the supply curve is inelastic). This short run inelasticity is not because producer costs fall as the market supply diminishes but rather because owners of existing buildings continue to supply housing because rents at least cover variable cost. It is quite unlikely that costs fall significantly as market supply is reduced so the long run supply curve is much more elastic and the contraction of the housing stock due to controls will be very large.

FIGURE ONE

USUAL ANALYSIS OF RENT CONTROL

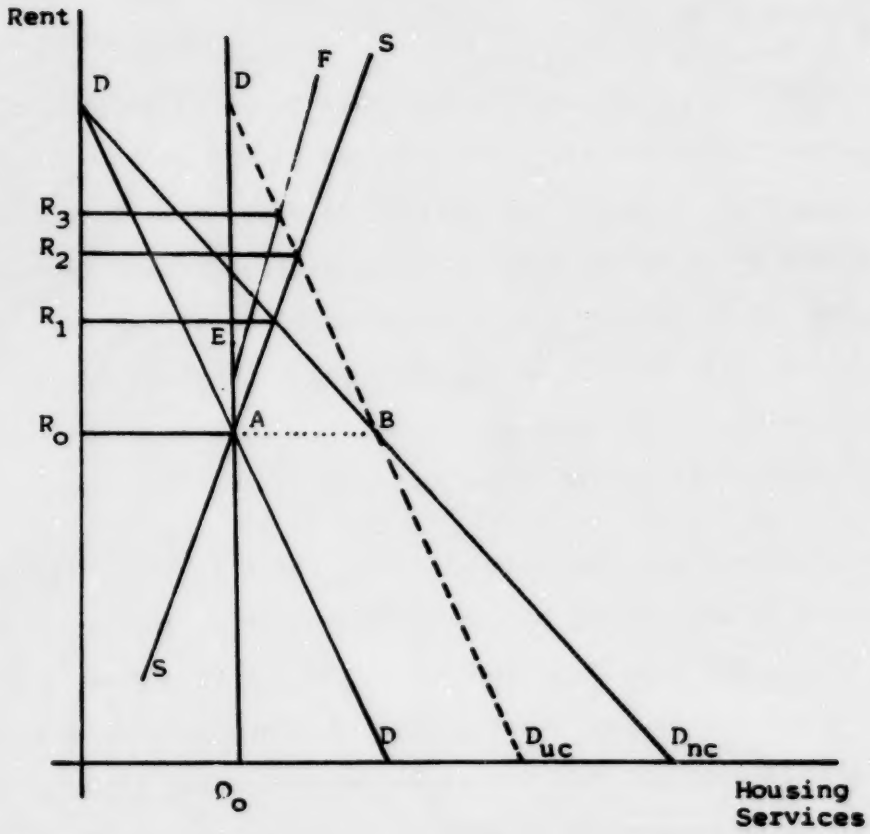


However some of the assumptions in the usual analysis are unduly restrictive and unrealistic. Controls may not actually set the price per unit of housing service, there may be side payments between landlords and tenants, and the assumption of homogeneous units misses much of what is involved in the maintenance decision. Work which has been done to analyse the implications of changing some of these assumptions was mentioned in the introduction. This paper is devoted to exploring the implication of relaxing the assumption that controls are universal. It analyses a system of controls which exempts new construction.[3] Obviously one of the serious drawbacks of universal controls is the reduction in the quantity supplied of housing services. In an attempt to minimize this,[4] most control regimes exempt units built after controls are imposed. This is the case in Ontario.

The analysis of controls with a new unit exemption is presented in Figure Two.[5] The market demand curve for rental housing services is DD, which is assumed to be the horizontal sum of the demand curves of the n households in a community. The market supply curve is SS. The equilibrium rent and quantity exchanged are R_o and Q_o. Assume that for some reason the market demand curve pivots to DD_{nc}. The possible reasons for this shift will be explored below. In the very short run, rents would rise to the intersection of DD_{nc} and the vertical line through Q_o; and in the slightly longer run rents would fall back to the intersection with SS, at R_1. Let us assume that to prevent this rent increase from happening, the government imposes rent controls. Rents on the existing stock, Q_o, are held at R_o, but new construction is exempt from controls. There are now two rental markets: the controlled and the uncontrolled. This representation differs slightly

FIGURE TWO

RENT CONTROLS WITH A NEW UNIT EXEMPTION
(New households increase demand)



from the usual which depicts controls as setting a price below the initial equilibrium. But this representation corresponds to the situation which usually surrounds the imposition of controls and helps to isolate the effects of a new unit exemption.[6] This approach also makes clear that the method of rationing the controlled stock at the outset is obvious - the tenants occupying the existing stock continue to do so.

In order to model the uncontrolled market, it is helpful to identify why the market demand curve pivoted from DD to DD_{nc}. There could be a number of causes. New households could move into the market area; the existing population could regroup itself into a larger number of households, ie., there could be an increase in the household headship rate[7]; or the existing tenants could increase their demand because of changes in income, prices, tastes or the demographic composition of the household.

Let us analyse first the case when the shift in the market demand curve is caused by the in-migration of households or the formation of new households. The existing (controlled) stock is already occupied so the new households are all forced into the uncontrolled market. The extra demand which shifted the market demand curve from DD to DD_{nc} all spills into the uncontrolled market. The demand and supply curves of the uncontrolled market can be represented in Figure Two. The horizontal axis measuring the quantity supplied/demanded of uncontrolled housing is the horizontal axis of Figure Two, to the right of Q_o. The vertical axis measuring rent in the uncontrolled market is the vertical line through Q_o. The supply curve of uncontrolled housing

is AS assuming new suppliers have no fears that controls will be extended to them and so supply is unaffected by controls. The demand curve for uncontrolled housing is DD_{uc}. This demand curve goes through point B because the demand curve in the absence of controls DD_{nc} is the horizontal addition of DD and DD_{uc}. Rent in the uncontrolled market is R_2, which is higher than the controlled rent R_o, and higher than the rent would have been in the absence of controls, R_1.

In the controlled market, it is assumed that the existing stock is inelastically supplied. (This could occur if existing owners were originally earning a normal rate of return and if their costs were unaffacted by the level of supply in the uncontrolled market). The rent is R_o and the quantity Q_o.

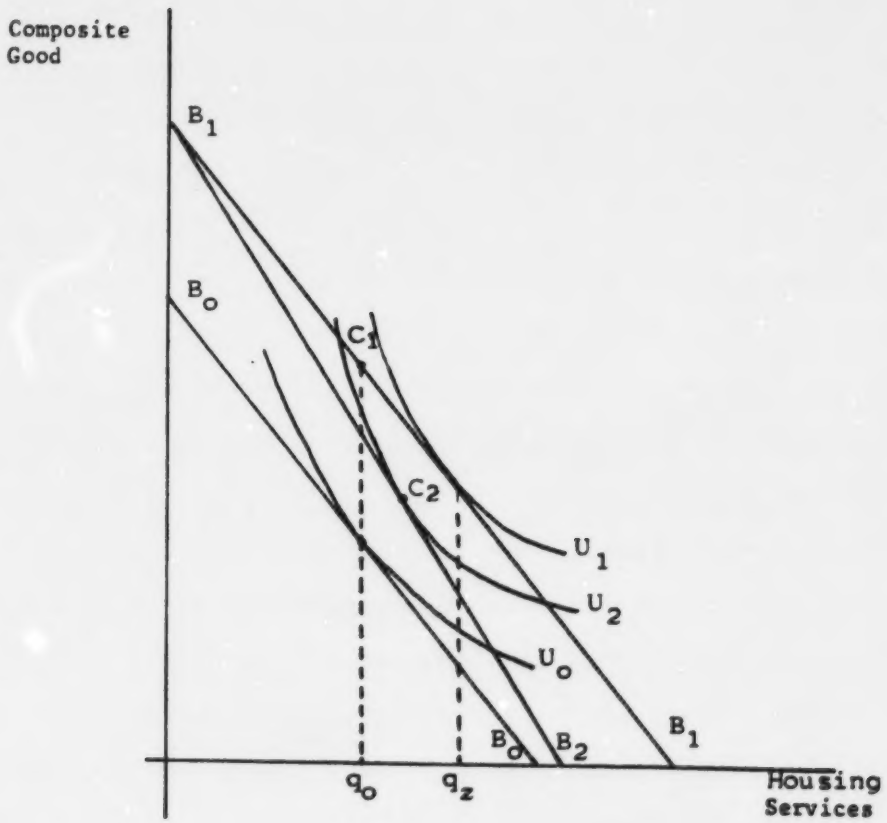
An interesting anomaly of this model is that total quantity supplied may actually increase under controls with exemptions. This would occur if the existing stock does not shrink and the supply curve is unaffected. In this case, because the spilled over demand curve is more inelastic, uncontrolled rents would be higher and new supply would be greater. Cheung (1975) cites the rationale provided by the Hong Kong government for the imposition in the 1920's of rent controls with a new unit exemption and it is clear the intent was to increase the stock of housing. This result , however, is highly unlikely to actually occur. Controls are unlikely to permit owners of the existing stock to realise a normal rate of return (the return their resources could realise in other uses); that is, controls will be binding , and so the existing stock will decline. Secondly, the supply curve will likely be affected by controls. Builders will attach a higher probability than before controls that controls will be

imposed on their units. Expected future rents will decline and the supply curve will shift up and likely become steeper as line EF in Figure Two. Rent in the uncontrolled market would then be even higher at R_3 and the quantity supplied would likely be less than would have been forthcoming without controls.

Turn now to the other cause of the shift in the market demand curve from DD to DD_{nc}, that the demand curves of the existing households have shifted out perhaps because of an increase in income. All households occupy a controlled unit but wish to consume more housing given the controlled rent R_o. However they cannot because the stock of housing remains at Q_o. Each household faces a choice represented in Figure Three. Originally the household faced budget line B_oB_o and chose to consume q_o units of housing service. Income then rose, shifting the budget constraint to B_1B_1. At the level of the market this shifted the demand curve from DD to DD_{nc}. If there were no change in rent, the household would choose to consume q_z of housing services. But it cannot do this. The household can either remain in the controlled market and consume the original level of housing services q_o at the controlled price R_o (i.e. continue to live in his original dwelling unit) or move to the uncontrolled market and face no constraint on the quantity of housing services consumed but also face the higher uncontrolled rent. The household will choose that market in which it enjoys a higher utility level. In Figure Three, the household can realise point C_1 by staying in the controlled market. Given a certain uncontrolled rent, the household in the uncontrolled market faces budget line B_1B_2 and would choose point C_2 and enjoy utility level U_2. The Figure has been constructed so that the household gets a higher level of utility in the controlled market. The household remains in the controlled market and all its increase in income is spent

FIGURE THREE

HOUSEHOLD CHOICES IN THE CONTROLLED AND UNCONTROLLED MARKETS



on other things; the excess demand spills into the markets for other things not the uncontrolled rental market.

Obviously, the household could find a higher utility level in either market. The result will depend on how much higher is the uncontrolled rent, how much income has increased and on the price and income elasticities of its demand for housing. The higher the income elasticity of demand, the more likely it is that the household will choose the uncontrolled market.

Assuming a positive income elasticity, at least one household will shift to the uncontrolled market. Once one household shifts the choices facing the remaining households change slightly. For those households which consumed less housing than the departing household, there is now an opportunity to remain in the controlled market, increasing their housing consumption while still enjoying the low rent. The final allocation of households between the two markets will depend upon the sequence of departures and the sequence of moves in the controlled market. Because there is excess demand in the controlled market, landlords can discriminate among prospective tenants at relatively little cost to themselves. They will likely tend to favour higher income tenants, tenants without children or tenants who they feel will remain a long time. Lower income tenants, families with children and young couples (who are more likely to move) will be rationed into the controlled market.

Returning to the level of the market, the rent in the uncontrolled market depends on the rationing mechanism and so the extent to which excess demand spills into the uncontrolled market. At one extreme,

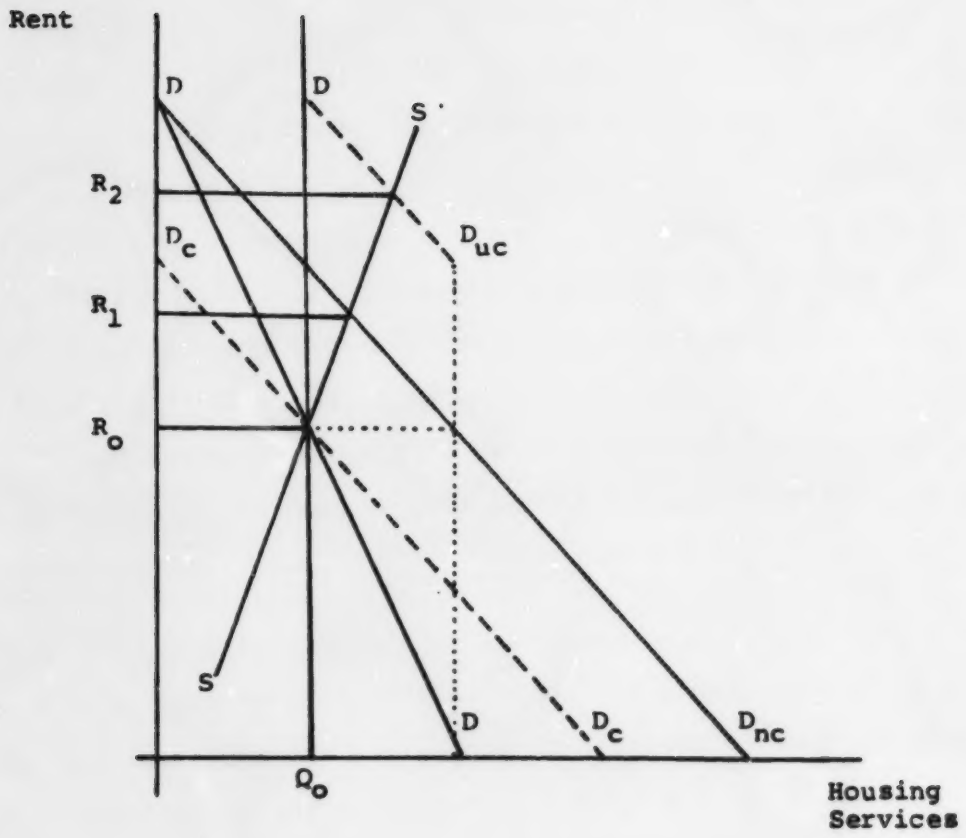
those households whose preferences formed the upper end of the DD_{nc} curve leave for the uncontrolled market as in Figure Four. Rent in the uncontrolled market becomes R_2, again assuming initially that controls have no effect on the supply curve. Rent is higher in the uncontrolled than the controlled market and higher than rents would have been in the absence of controls (quantity supplied is greater). If the supply curve is affected by controls and shifts up, uncontrolled rents will be still higher and quantity supplied may be less than in the absence of controls. The demand curve in the controlled market becomes D_cD_c (the horizontal addition of the demand curves in the two markets is DD_{nc}).

At the other extreme, few households leave the controlled market. The rent in the uncontrolled market again is higher than in the controlled market but it could be less than the rent would have been in the absence of controls. In this case there is considerable excess demand in the controlled market. However, it is quite unlikely that the uncontrolled market rent will be less than the rent in the absence of controls because the supply curve will likely shift up, many existing households will find higher utility in the uncontrolled market and many new households will be forced into the uncontrolled market.

This extension of the analysis of rent controls to deal with a new unit exemption has shown how rents are determined in the controlled and uncontrolled markets and compared them to what rents would have been in the absence of controls. It emphasizes the importance of shifts in the supply curve and the method of rationing the controlled stock for understanding the determination of rents. It argues that the nature of shifts in demand strongly influences the rationing mechanism.

FIGURE FOUR

RENT CONTROLS WITH A NEW UNIT EXEMPTION
(Demand of Existing Tenants Increases)



The model was set up in such a way that controlled rents permitted owners of existing stock a normal rate of return and therefore the issue of controls accelerating the depreciation of the existing stock should not arise. Controls which do not allow a normal return will reduce maintenance, and speed conversion of apartments and their land to other uses. In this case, tenants in controlled units would consume less than q_o (Figure Three), more would leave for the uncontrolled market, and the rent per unit of housing service might actually rise in the controlled sector.

The model yields three important predictions. The first is that rents in the uncontrolled market will be higher than rents in the controlled market. The second is that uncontrolled rents will be higher than rents would have been in the absence of controls.[8] Together these imply that there are important differences among tenants and among landlords under a regime of rent controls with exemptions. Some tenants may be made worse off by the imposition of controls. Some landlords (or owners of factors used in producing new housing) may actually be better off. The standard analysis of the incidence of controls must evidently be reassessed. The third prediction relates to what sorts of households will be rationed into the uncontrolled market and so be forced to pay the higher rent. The analysis suggests new entrants and newly formed households will tend to be forced into the uncontrolled market; as well, landlords of controlled stock will tend to favour higher income households, households without children and older households. This greater likelihood of high income households remaining in the controlled market may be offset by a high income elasticity of demand for newness; and the fact that uncontrolled units are new and usually imply a relatively high number of units of housing service per

dwelling so that only high income persons will find their utility higher in the uncontrolled market. Low income households might achieve a higher utility in the uncontrolled market, but no units with small quantities of housing services are available.

The remaining three sections of the paper are devoted to an examination of the Toronto housing market to see whether the data support the predictions of the model.

3 CONTROLLED AND UNCONTROLLED RENTS COMPARED

The first prediction of the model is that rents in the uncontrolled sector will be higher than rents in the controlled. This is scarcely a surprising prediction, but not one which can be easily verified. Observed rents in the two sectors could be compared but this would not test the prediction of the model. Although observed uncontrolled rents are higher than observed controlled rents, this may be because units in the uncontrolled sector have more desirable characteristics. The uncontrolled units are newer under controls with a new unit exemption, and they may be larger, or better designed or provide more facilities or be better located and so on. The model in Section 2 compared the price in the two markets of a homogeneous unit of housing service. Unfortunately, this comparison cannot be undertaken empirically because the homogeneous unit of housing service is not an observable concept. The theory of hedonic pricing, however, offers a way to deal with this problem.

We all recognize that housing is a heterogeneous commodity. Dwelling units differ in their size, age, design, and location - or phrased differently -are of different quality. For some sorts of questions, for example those addressed in Section 2, insight is gained by abstracting from this and assuming a homogeneous commodity. This is analogous to the practice in labour economics where the heterogeneity of labour is ignored, and labour is defined in terms of 'efficiency' units. For other sorts of questions, however, this heterogeneity is central and an alternative approach is required. Such an alternative is provided by Rosen (1974) and Lucas (1975). Only the spirit rather than details of these papers

need concern us here, but a full understanding of them is necessary for the interpretation of estimated hedonic prices.

Rosen examines the market for a class of heterogeneous products, such as housing. The product (housing) is completely described by a vector of objectively measured housing characteristics. These products are thus valued because their characteristics yield utility. A more general treatment would assume that these characteristics together with the consumer's time are inputs into the home-production of goods which yield utility.[9] Firms produce these products, with the marginal cost of producing another unit of product positive and increasing and the marginal cost of increasing one characteristic of a product also positive and increasing. If the product can be described by the vector $z = (z_1, \ldots z_n)$ with z_i measuring the amount of the i th characteristic, then the equilibrium price for a particular sort of product $p(z_1, \ldots z_n)$ will be such that the amount willingly supplied and willingly demanded are equal. These prices, as in any market, are shaped by consumer tastes, and the production technology.

Thus each bundle of characteristics $(z_1, \ldots z_n)$ has associated with it a price $p(z)$. This is the minimum price for this bundle. Hedonic prices are defined as the implicit prices of characteristics revealed from observed prices, and the related bundles of characteristics. The value of $\partial p(z)/\partial z_i$ is the additional cost of buying one more unit of characteristic z_i. In principle, the functional form of $p(z)$ should be derivable, given tastes and technology. In practice, however, it cannot be derived and theory gives no general guidance as to the functional form, although it does point out there is no <u>a priori</u> reason why it should be linear or semi-log or double log.

The market thus generates data on p(z) and bundles of characteristics ($z_1, \ldots z_n$). The parameters of any assumed p(z) function can be estimated using actual data. Usually the p(z) function is assumed to be either linear (1), semi-log (2) or double log (3). There have been numerous econometric estimates of the hedonic prices of housing

$$p(z) = \alpha_1 + \Sigma\beta_i z_i \tag{1}$$

$$p(z) = e^{\alpha_1 + \Sigma\beta_i z_i} \tag{2}$$

$$\ln p(z) = \alpha_1 + \Sigma\beta_i z_i$$

$$p(z) = \alpha_1 z_1^{\beta_1} z_2^{\beta_2} \ldots z_n^{\beta_2} \tag{3}$$

$$\ln p(z) = \ln\alpha_1 + \Sigma\beta_i \ln z_i$$

characteristics. Rent or house value is regressed on the characteristics of the dwelling such as its floor space, number of bedrooms, or age; and the characteristics of its neighbourhood such as adjacent land uses, quality of public services or racial make-up of the residents; and its locational characteristics such as distance to employment centres, shopping or subway. Ball (1973) provides a survey of much of the work to the early 1970's. Butler (1982) points out that researchers have found little to choose between alternative functional forms of the hedonic price equation and, for one data set, shows that the practical impact of using a restricted set of independent variables rather than a much larger (though inevitably still incomplete) set is rather small.[10]

The hedonic pricing technique can be used in addressing the question raised at the beginning of this section. Are the prices (rents) of equivalent housing services higher in the uncontrolled market than in the controlled market - or alternatively, is a given quality of housing more expensive in the uncontrolled as opposed to the controlled market?

Although we can observe that average rents are higher in the uncontrolled market, this can be a result of two factors: the characteristics of dwelling units in the two sectors may be different, and/or the implicit (hedonic) prices of characteristics in the two markets may be different.[11] Similar to the classic index number problem, there are two indices, corresponding to the Laspeyres and Paasche price indices, which might be used to establish in which market rents are higher. Index I, as in (4), uses the price function of the two markets weighted by the

$$I = \frac{\sum^{n} p_{uc}(z_c)}{\sum^{n} p_c(z_c)} \qquad (4)$$

characteristics of the dwelling units in the controlled market. Index II, as in (5), uses the price function of the two markets weighted by the characteristics of the dwelling units in the uncontrolled sector.

$$II = \frac{\sum^{m} p_{uc}(z_{uc})}{\sum^{m} p_c(z_{uc})} \qquad (5)$$

It is assumed there are n units in the controlled market and m units in the uncontrolled. If these indices are greater than one, the rents are higher in the uncontrolled sector.

To test the theoretical model of Section 2 requires that a hedonic price equation be estimated for the controlled and uncontrolled market and that the indices be computed. At first it was thought CMHC already had sufficient data to undertake this; but this proved to be incorrect. A special survey was financed by CMHC to collect data for these estimations. Here is an appropriate place for a short digression to describe the survey and the data which were collected.

The survey was conducted by the Institute for Behavioral Research, Survey Research Centre, at York University. A sample was drawn from the data set which CMHC uses for the vacancy survey of the housing

market of the Toronto Census Metropoital Area (CMA). This data set lists all buildings containing six or more rented dwelling units and also provides certain information on these buildings. The listing indicated whether the building was controlled or uncontrolled. The data listing also divided the market into 'private' buildings and 'public' buildings, that is buildings assisted under the entrepreneurial, or non-profit programs. A random sample of 175 private, controlled buildings was drawn. The original strategy was to draw an equal sized sample of private uncontrolled buildings, but there were fewer buildings than this in the universe. The entire universe of 140 private uncontrolled buildings was included in the sample. An additional sample of 35 public buildings was also selected; but the data from the sample were not used in the research of this paper. Then 8 units per building were randomly selected and a questionnaire was mailed to the tenant. Two mailed reminders were followed by a telephone reminder. This produced 637 responses from the controlled sector, 500 responses from the non-controlled sector and 152 responses from the public sector (106 entrepreneurial units and 46 non-profit units). This was a response rate of about 45 per cent in the controlled and uncontrolled sectors and 54 per cent in the public sector.

The questionnaire is contained in Appendix A. It gathered data of five types: characteristics of the dwelling unit such as number of bedrooms; characteristics of the building such as quality of its interior maintenance; characteristics of the neighbourhood of the building/dwelling unit such as adjacent land uses; characteristics of the location of the building/dwelling unit such as the distance to the nearest subway stop; and characteristics of the tenant households such as their demographic composition. The survey data were augmented in three ways. Researchers independently computed the distance from

the building/dwelling unit to the City Hall, Toronto, under the belief that this would be more accurate than the tenant's estimate.[12] Enumerators were sent to each building to answer 5 questions related to the neighbourhood quality and to make a summary measure of the neighbourhood quality. Data from the CMHC universe listing were used to obtain the year of construction of the building, the number of floors, the number of apartment units and whether it was controlled or uncontrolled.

This data set was then used to estimate hedonic price equations in addressing the question of whether rents were higher in the uncontrolled than the controlled sectors. Jazairi (1983) also used this data set to address the same question, but with special emphasis on using econometric techniques to deal with the multi-collinearity problem (as is discussed further below). We proceeded with close consultation with Professor Jazairi, but many independent regressions were run so a comparison of both sets of results affords a test of the robustness of any specification.

Although 42 characteristics were originally included in the "true" set of characteristics for each dwelling unit when the survey was designed, a number of these characteristics had to be deleted in the estimation of the hedonic price equation. Deletions were necessitated by a number of causes. First, many of the housing characteristics are highly interdependent. An apartment with air-conditioning for example is also likely to have a thermostat, or an apartment with electricity provided in the rent is also likely to have heat provided, or a recently built apartment near the city centre is likely to have an elevator. This condition of interdependence between the explanatory variables of a regression equation is referred to as the 'collinearity' or

'multi-collinearity' problem. The presence of collinearity leads to imprecision and instability of the ordinary least squares estimates of the coefficients of the hedonic rent equation. The regression coefficients, though unbiased, will diverge from their true values, have large standard errors, fail to capture the separate effects of the explanatory variables and become sensitive to small changes in the data. These coefficients in extreme cases may also assume wrong signs." (Jazairi, 1983) . Second, the response rate on several variables, for example on the floor area of the apartment, was extremely poor. Third, some variables were clearly marginal on a priori grounds in the sense that no strong presumption on their signs existed. Fourth, the quality of the data was suspect on self-assessment type questions such as, 'how would you rate the interior maintenance of your building?' The answer to such questions often depends upon the tenant's expectation of what is proper maintenance, with the result that buildings which are well-maintained relative to all buildings might be judged to be poorly-maintained by their occupants who have high expectations (possibly because they are paying high rent). Fifth, the retention of all variables, several of which were expressed as 4 or 5 separate dummy variables, would cause the analysis to become unwieldy. Since Butler (1982) found that the practical impact of using a restricted list of variables was rather small, there was little reason to attempt to include the full set of original characteristics. Consequently, a restricted set of variables was used in the final hedonic regressions.

Variables and observations were excluded from the final regressions because of poor response rates, a priori feelings that they were marginal or questions about the quality of the responses. Only unfurnished apartments in which the landlord provided heat, water, a stove and a refrigerator were included. Apartments with fireplaces or doormen,

and basement apartments and townhouses were excluded. A few apartments built well before 1975 but which were classified as uncontrolled were also excluded.

Most of the colinear variables were identified by a stepwise regression procedure used to deal with the multi-collinearity problem. In this procedure, variables were added according to their significance in explaining the variation in rent, as measured by the R^2. After the first set of variables was identified, stepwise regressions were run for the controlled and uncontrolled markets separately, and for the controlled and uncontrolled markets together. A final set of ten variables, which are listed in Table One, was then selected. Of the ten variables selected, eight were included in the stepwise regressions for all three groupings containing 10 variables, and all of the variables were included in all the stepwise regressions containing 14 variables. Although the original sample contained 637 controlled units and 500 uncontrolled units, many observations did not include full information on the included variables. Consequently, the final regressions using the 10 variables contained 398 dwelling units in the controlled market and 305 units in the uncontrolled market.

Table Two lists the mean or distribution of the variables used in the hedonic regressions. The average rent in the controlled sector is $358 and the average uncontrolled rent is $530. On average controlled rents are 32 per cent lower $\left(\frac{530-358}{530}\right)$ than uncontrolled rents; or uncontrolled rents could be said to be 48 per cent higher $\left(\frac{530-358}{358}\right)$. The question to answer is how much of this difference is attributable to differences in prices of characteristics and how much is attributable to differences in characteristics (quality) between the two sectors?

Table One

Variables Used in the Hedonic Equations

Variable	Definition
ER	Extra rooms = Total number of rooms less number of bedrooms
BED	Number of bedrooms
BATH	Number of bathrooms (room with sink and toilet counts as ½ bathroom)
FLOOR	Floor of building on which the apartment is situated
AIR	Air conditioning provided by landlord (=1 yes)
DISH	Dishwasher provided by landlord (=1 yes)
PARK	Parking provided (=1 yes)
AGE	Year of construction of the building (years after 1900)
DIST	Distance from city centre (Km)
NBHD	Neighbourhood quality (=1 good/high quality)
UNCT	Dummy (=1 uncontrolled)

Table Two

Mean or Distribution of Variables

Variable	Mean (or Distribution)		
	Controlled	Uncontrolled	Pooled
RENT	$358	$530	$428
ER	3.09	3.47	3.24
BED	1.52	1.88	1.66
BATH	1.08	1.21	1.13
FLOOR	6.97	7.93	7.36
AIR	Yes 10%	Yes 57%	Yes 28%
DISH	Yes 2%	Yes 14%	Yes 7%
PARK	Yes 71%	Yes 83%	Yes 76%
AGE	65	79	71
DIST	11.3	17.1	13.6
NBHD	High/Good 37%	High/Good 46%	High/Good 40%

On average, as would be expected, the uncontrolled units are of higher quality. They have more bedrooms, bathrooms and extra rooms. One might speculate that the average room size of these newer apartments is smaller than the average room size of the older controlled apartments; but on the other hand the design and layout of the controlled units may be obsolete and less desirable. Uncontrolled units tend to provide more extra facilities. The uncontrolled units are newer, but on average are further from the centre of the city. Obviously some of the difference between the average rent in the controlled and the uncontrolled market is attributable to higher quality in the uncontrolled sector.

The precise manner of creating a rent index to compare the quality controlled rents in the two markets has been pointed out above. A special case of this method is to assume that the hedonic price functions in the two markets, $p_{uc}(z)$ and $p_c(z)$ are closely related - having the same functional form but differing in a constant term. If the functional form is assumed to be linear, then the two functions are related as in (6). The intercept and coefficients of the z_i are the

$$p_{uc}(z) = \alpha_1+\alpha_2+\Sigma\beta_i z_i \qquad (6)$$

$$p_c(z) = \alpha_1+\Sigma\beta_i z_i$$

same; but there is a constant absolute difference in rent equal to α_2 between any two dwelling units of similar characteristics depending on whether the unit is in the controlled or uncontrolled market. The indices (4) and (5) will vary with the z's used. If the functional form is assumed to be semi-log, then the two functions are related as in (7). The ratio of the two functions is a constant, e^{α_2}. A unit will have a constant percentage amount greater rent if it is in the

$$p_{uc}(z) = e^{\alpha_1+\alpha_2+\Sigma\beta_i z_i} \qquad (7)$$

$$p_c(z) = e^{\alpha_1+\Sigma\beta_i z_i}$$

uncontrolled as opposed to the controlled market. The indices (4) and (5) will be the same regardless of the z's used.

This approach assumes that the functional form is the same in the two markets. In general, under the linear form, the hedonic prices ($\partial p(z)/\partial z_i$) are constant, regardless of the characteristics of the dwelling unit under consideration. In (6) the hedonic prices are the same in the controlled and uncontrolled markets. In general under the semi-log form the hedonic price varies according to the characteristics of the dwelling unit under consideration, and therefore the hedonic prices are not the same within a market or in the controlled and uncontrolled markets. Within a market, the percentage increase in rent with a unit change in characteristic z_i is a constant β_i. In (7) this percentage increase is the same in the two markets.

The hedonic equations can be estimated by pooling the data from the two markets and creating a dummy variable, equal to zero if the unit is in the controlled market and equal to one if the unit is in the uncontrolled market. The estimated coefficient of the dummy will be the estimate of α_2. The results of such a regression are presented in Table Three.[13] The dummy variable's coefficient is labelled UNCT.

The linear regression reveals a constant absolute difference between a controlled and uncontrolled unit of $106. If the index uses the z's of the pooled data (a variant of indices I and II), controlled rents after controlling for quality are 20 per cent lower than uncontrolled rents $\left(\frac{106}{106+428}\right)$, or uncontrolled rents are 25 per cent higher $\left(\frac{106}{428}\right)$. This compares with nominal controlled rents which are 32 per cent lower or nominal uncontrolled rents which are 48 per

Table Three

Uncontrolled and Controlled Markets
Hedonic Price Estimations

Variable	Linear	Semi-Log
Intercept	22.8*	5.096
	(0.80)	(85.76)
ER	11.3	.020
	(2.97)	(2.48)
BED	42.9	.115
	(10.52)	(13.50)
BATH	113.1	.153
	(10.28)	(6.68)
FLOOR	-0.4*	.0003*
	(-1.00)	(0.37)
AIR	31.6	.080
	(4.87)	(5.83)
DISH	59.4	.064
	(5.47)	(2.84)
PARK	44.5	.064
	(7.09)	(2.84)
AGE	2.2	.006
	(5.27)	(7.03)
DISTANCE	-5.3	-.010
	(-14.92)	(-13.46)
NBHD	4.3*	.015*
	(0.85)	(1.40)
UNCT	105.7	.218
	(13.43)	(13.32)
	R^2=.755	R^2=.761

*Not significantly different from zero at the 95% level
t statistics are in brackets below the estimates of the parameters.

cent higher. Depending upon the base figures used 63 per cent (20/32) or 52 per cent (25/48) of the difference in nominal rents is not explained by quality differences. The difference is due to rent control.

The semi-log regression reveals a constant ratio, $P_{uc}(z)/P_c(z)$, equal to $e^{.218}$ or 1.244. Regardless of the z's used (i.e. regardless of whether index I or index II or the variant above is used), controlled rents after controlling for quality are 20 per cent lower than uncontrolled rents, as in (8). Uncontrolled units have a 24 per cent higher rent

$$\frac{P_{uc}(z)-P_c(z)}{P_{uc}(z)} = 1 - \frac{P_c(z)}{P_{uc}(z)} = 1 - \frac{1}{e^{\alpha_2}} = .20 \qquad (8)$$

as in (9). Depending on the base used 63 per cent or 50 per cent of

$$\frac{P_{uc}(z)-P_c(z)}{P_c(z)} = \frac{P_{uc}(z)}{P_c(z)} - 1 = e^{\alpha_2} - 1 = .24 \qquad (9)$$

the percentage difference in nominal rents is due to rent control.

Jazairi (1983) conducted a similar exercise with a semi-log formulation, different variables and a slightly different data set. He found that 58 per cent or 52 per cent of the percentage difference in nominal rents is due to rent control. This suggests the results are quite robust.[14]

Thus the data strongly support the prediction of the model that rents in the uncontrolled sector will be higher than in the controlled sector, since quality adjusted rents are 24-25 per cent higher in the uncontrolled than in the controlled sector.

An alternative approach is to assume that the functional form of the hedonic equation is the same in the two sectors, but that it may have different parameters. Using this approach, hedonic equations for the two

markets are estimated separately, and then indices (4) and (5) are calculated. The results of these regressions are presented in Tables Four and Five.[15]

There is an important question about how to interpret the hedonic equation estimated for the controlled market. The problem arises because this market is likely in dis-equilibrium, in the sense that the quantity willingly supplied for any type of apartment is likely less than the quantity willingly demanded. Rent controls were imposed in 1975 and although rents have risen, the rise does not completely reflect changes in demand, or changes in input prices and production technology. Consequently, the relationship between rents and housing characteristics is not generated by the sort of equilibrium mechanism modelled by Rosen (1974). Nevertheless, whatever the generating mechanism, the relationship between controlled rents and housing characteristics does generate a set of implicit prices, although it is unclear whether another unit of the characteristic could be obtained at the marginal price. It is in this context that the hedonic equation of the controlled market must be interpreted.[16]

In Table Four, the intercept of the linear regression for the uncontrolled market has a negative coefficient. This occurs because all the buildings are built after 1975 and the year of construction variable (AGE) is expressed as years after 1900. If the variable were re-expressed as years after 1975, the intercept would be 294.8. Comparing the linear regressions for the controlled and uncontrolled markets reveals that the uncontrolled market has a higher corrected intercept and higher prices on all characteristics except the number of bedrooms, floor, air conditioning and neighbourhood quality. Index I, which uses controlled market characteristics as weights, is 1.15; index II, which uses

Table Four

Uncontrolled Market
Hedonic Price Estimations

Variable	Linear	Semi-Log
Intercept	-245.2*	4.735
	(-0.76)	(8.94)
ER	12.2	.020
	(2.14)	(2.16)
BED	37.4	.095
	(5.66)	(8.72)
BATH	126.5	.149
	(7.60)	(5.42)
FLOOR	-2.1	-.003
	(-2.84)	(-2.78)
AIR	24.3	.057
	(2.53)	(3.59)
DISH	61.6	.077
	(4.22)	(3.19)
PARK	58.1	.098
	(4.77)	(4.90)
AGE	7.2*	.015
	(1.75)	(2.21)
DIST	-6.7	-.011
	(-11.67)	(-11.86)
NBHD	8.0*	.0004*
	(0.83)	(0.03)
	R^2=.674	R^2=.675

*Not significantly different from zero at the 95% level
t statistics are in brackets below the estimates of the parameters.

Table Five

Controlled Market
Hedonic Price Estimations

Variable	Linear	Semi-Log
Intercept	89.4 (3.36)	5.13 (73.65)
ER	8.1* (1.64)	0.023* (1.77)
BED	44.6 (9.4)	.126 (10.13)
BATH	75.7 (5.4)	.143 (3.89)
FLOOR	1.52 (3.08)	.004 (3.15)
AIR	41.68 (4.84)	.110 (4.87)
DISH	33.5* (1.73)	.031* (0.6)
PARK	36.2 (5.69)	.103 (6.17)
AGE	1.2 (3.4)	.004 (4.24)
DIST	-2.63 (-5.65)	-.006 (-5.08)
NBHD	15.2 (2.75)	.042 (2.87)
	R^2=.540	R^2=.541

*Not significantly different from zero at the 95% level
t statistics are in brackets below the estimates of the parameters

uncontrolled characteristics as weights, is 1.24. The pooled market linear run with a dummy, which uses the characteristics of both markets as weights, found uncontrolled rents were 25 per cent higher. These results are consistent given that the uncontrolled market has higher prices and most of the more desirable characteristics.

In the semi-log regressions, the estimated parameters are not the hedonic prices in the sense of $\partial p(z)/\partial z_i$. The estimated parameters represent the percentage increase in rent for a unit increase in the characteristic, as in (10). Tables Four and Five show that the estimated parameters

$$\frac{\partial p(z)}{\partial z_i} = e^{\alpha+\Sigma\beta_i z_i}.\beta_i$$

$$\frac{\frac{\partial p(z)}{\partial z_i}}{p(z)} = \beta_i \qquad (10)$$

are higher in the controlled market than in the uncontrolled, except for the bathroom, dishwasher, age and distance characteristics. However when the hedonic prices are calculated for each market, evaluated at the mean rent (mean of all characteristics), then the uncontrolled market has higher prices for all characteristics except air conditioning and neighbourhood quality. These results are similar to the linear case. These calculations are presented in Table Six. Index I is 1.14, and index II is 1.27, (evaluated at the mean value of the characteristics in each market). The results accord well with those of the linear model.

Table Six

Implicit Hedonic Prices

Evaluated at Mean of All Characteristics
(Semi-log Regression)

Variable	Controlled	Uncontrolled
ER	8.2	10.6
BED	45.1	50.4
BATH	51.2	80.0
FLOOR	1.4	1.6
AIR	39.4	30.2
DISH	11.1	40.8
PARK	36.9	51.9
AGE	1.4	8.0
DIST	-2.1	-5.8
NBHD	15.0	0.2

TABLE SEVEN

Summary of the Quality Adjusted (Hedonic) Indices of Uncontrolled to Controlled Rents

	linear regressions	semi-log regressions
Index I	1.15	1.14
Index II	1.24	1.27
Pooled Runs	1.25	1.24

The various calculations, summarized in Table Seven, thus yield remarkably consistent results and support the predictions of the model. After standardizing for differences in the characteristics of the two sectors, rents are significantly higher in the uncontrolled market than in the controlled market. Depending on the method of comparison used, rents are from 14 to 27 per cent higher in the uncontrolled market than in the controlled market. Index II and the pooled results indicate these rents to be 24 to 27 per cent higher, while Index I indicates these rents to be 14 to 15 per cent higher. If the hedonic prices of characteristics are permitted to vary between markets, the prices of most characteristics are also higher in the uncontrolled market than in the controlled market.[17]

4. RENTS IN THE ABSENCE OF CONTROLS

The second prediction of our model is that the equilibrium rent in the uncontrolled sector under a regime of rent controls will be higher than the equilibrium rent in the absence of controls. Although intuitively such a prediction should seem relatively easy to test, in actuality a precise test is not possible in the Ontario rental housing market. We thus are forced to rely in this section on a more informal or impressionistic approach.

In order to test our prediction, quality adjusted rents in the uncontrolled rental sector, i.e., the implicit (hedonic) prices of rental housing characteristics in the uncontrolled sector applied to the housing characteristics in the controlled sector, should be compared with the rents that could be predicted to have occurred for equivalent housing services in the absence of rent controls. This comparison, however, is complicated by a variety of problems associated with the prediction of rents in the absence of controls.

A. A Rent Determination Model

The theoretically most rigorous method of determining rents in the absence of controls would be to empirically estimate a model of rent determination in the pre-rent control period and, assuming no structural changes in the market, use this model to forecast what equilibrium rents would have been in the control period. A number of rent determination models have been empirically implemented, including Arnott (1981) and Smith (1974) for Canadian cities, Kalymon (1981) for Toronto, and Rosen and Smith (1983) for U.S. cities. The essence of these models is that a relationship exists between real rent changes and excess

demand or supply conditions in the rental market, as measured by deviations in the actual vacancy rate from the long run normal (or natural) vacancy rate. This relationship can be restated in terms of the rate of increase in nominal rents such that the rate of increase in the nominal rent, $\overset{\circ}{R}$, is a function of the rate of increase in operating costs, $\overset{\circ}{OC}$, the rate of depreciation (or deterioration), $\overset{\circ}{D}$, and the deviation of the natural vacancy rate from the actual vacancy rate, V^n-V, as is set out in equation (11).

$$\overset{\circ}{R} = f(\overset{\circ}{OC},\overset{\circ}{D},(V^n-V)) \qquad (11)$$

The rate of depreciation may be entered explicitly into the specification, or it may be assumed to be incorporated in the intercept or the operating costs.

Although the relationship set out in equation (11) has been empirically confirmed, it is inappropriate for forecasting 1982 rents in Toronto in the absence of controls for a variety of reasons. First, the relationship specified between the rate of increase in rent and deviations in the actual vacancy rate from the natural rate, whether the latter is formulated as a simple difference (V^n-V), or a difference of ratios ($\frac{1}{V} - \frac{1}{V^n}$), holds only over a normal range of vacancies. As the actual vacancy rate approaches zero, the relationship may break down because the deviation of the actual from the natural vacancy rate may not reflect the full extent of the excess demand. This happens because the deviation of the actual from the natural rate may not reflect the excess demand that may exist in the form of an unobserved queue for housing services as the vacancy rate approaches its lower limit. Since the vacancy rate for the Toronto CMA for October 1982 was 0.7%,[18] there is a high probability that excess demand was rationed out of the market and that rent increases beyond those implied by an empirically implemented equation (11) would be necessary

to restore the natural vacancy rate.[19]

Second, the direct application of equation (11) to determine the rate of rent increase that would have occurred in the absence of controls implies that both the supply of and demand for rental housing services are unaffected by the existence of rent controls. If the supply of rental housing is negatively affected by rent controls, for example, for any given rent the actual vacancy rate will be lower and the forecast rent increase higher than would have occurred in the absence of controls. Since Smith and Tomlinson (1981) indicate that rent review in Ontario has reduced the rental housing stock by reducing new rental construction and stimulating conversions from rental housing, the application of equation (11) using the actual vacancy rate (assuming it correctly reflects the full excess demand, as discussed above) would overestimate the increase in rent that would have occurred in the absence of controls, assuming the reduction in supply exceeded the reduction in rental demand associated with rent control induced government homeownership assistance plans such as AHOP and first time homebuyer grants (see Fallis (1980) and Smith (1981)).

To overcome this problem a complete model of the housing market, including a forecast of government housing programs and housing construction in the absence of rent controls, is required. However, the multiplicity and complexity of government housing programs during this period, and the variations in these programs and in the behavioural functions, eg., in the response to inflation, between the pre-control and control periods, make it unlikely that a reliable forecasting model could be constructed.

Third, it is likely that the natural vacancy rate changed, and even in the absence of rent controls would have changed, between the pre-control estimation period and 1982. Rosen and Smith (1983)

indicate a number of variables that affect the natural vacancy rate, and many of these, such as the tenant turnover rate and the growth rate of the rental housing stock, changed substantially between the pre-control period and 1982 in Toronto.

Fourth, the model is specified in terms of the rate of increase in rent. To predict the level of rent in the absence of rent controls the cummulative predicted increase in rent is applied to the rent level at the time (1975) rent controls were implemented. Abstracting from problems associated with determining the actual level of rent in 1975, this implies that the rate of deterioration in the quality of housing services will be the same during the control period as during the pre-control estimation period. If this is not the case, the variation in the quality of housing services arising from the altered rate of deterioration rate will be unpriced. For example, if rent controls cause the rate of deterioration to increase, the quality of housing services implicitly priced by equation (11) will be higher than the actual quality to which the hedonic prices are applied since the pre-control rate of deterioration is incorporated in the model coefficients. Since Arnott (1981) and Smith and Tomlinson (1981) demonstrate that the rate of deterioration for rent controlled housing is likely to be increased by rent controls, the use of equation (11) would over-estimate the increase in rent applicable for the actual 1982 characteristics of the housing services. Moreover, because the price and characteristics of the 1975 rental housing services are not known with precision this bias cannot be overcome directly.

As a result of the foregoing problems, a formal rent determination model and forecasting procedure cannot be utilized to predict the equilibrium rent in the absence of controls, and hence a more

informal or impressionistic approach must be used.

B. An Adjusted Real Rent Approach

The informal approach adopted to predict rents in the absence of controls is basically an adjusted real rent approach. In this approach it is assumed essentially that in the absence of rent controls the rate of increase in the real rent for a given quality of housing services would have been the same as in the recent pre-control period, and thus that the rate of increase in nominal rent would have borne the same relationship to the rate of inflation as in the recent pre-control period. The increase in the nominal rent in the absence of rent controls is calculated in two stages. First, the historical relationship between the rate of rent increases and inflation is determined to predict the rent increase that would have occurred if the rental housing market had been in equilibrium at the time that rent controls were implemented. Second, the state of the rental housing market at the time of the implementation of rent controls is examined, and an adjustment is made to reflect the real rent increase that would have been necessary to restore price equilibrium.

The predicted increase in rent in the absence of controls is then compared to the actual increase under rent review in the index of uncontrolled rents to determine the relationship between uncontrolled rents under rent review and the equilibrium level of rents in the absence of rent controls.

The actual increase in the index of uncontrolled rents under rent review is calculated in three stages. First, the actual increase in the average rent on rent controlled units is calculated. Second, the price adjustment necessary to correct for rent control induced

quality changes, i.e., for the difference between changes in the quality of housing services associated with a given housing stock under rent control and changes implied in the historic relationship between the rate of rent increases and inflation, is considered. This adjustment is required to standardize the quality of housing services being priced under the control and non-control regimes. Third, the difference between the 1982 uncontrolled hedonic price of 1982 rent controlled housing services and the actual 1982 controlled rent for these services calculated in Section 3 is added to the actual increase in the rent on rent controlled units to determine the increase in the index of uncontrolled rents under rent review.

1. Prediction of Rents in the Absence of Controls

In order to predict the increase in the nominal rent in the absence of rent controls, the historic relationship between the rate of rent increase and inflation must be determined. To do this the rates of inflation and rent increases are compared during 1961 to 1975 in Canada, and during 1960 to 1980 in the United States. Between 1961 and 1975, the overall Consumer Price Index (CPI) in Canada rose 86.7 per cent while the rental component of the CPI rose only 34.8 per cent. Between 1960 and 1980 the Bureau of Labour Statistics' CPI in the U.S. rose 179 per cent while residential rents rose only 108 per cent, with approximately two-thirds of the decline in real rents occurring during the higher inflation period after 1970. Although some of the decline in real rent in the U.S. may be attributable to the imposition of rent control in some jurisdictions, this bias is considered by Lowry (1981) to be minor.

Before determining the relationship to be extrapolated between the historic rate of rent increase and the rate of inflation it is

necessary to consider some possible explanations for the measured decline in real rents, and for the larger decline in measured real rent in Canada than in the U.S.

The most obvious explanation for a decline in measured real rent is that rental apartment structures suffer real economic depreciation or deterioration that may not be appropriately measured in the CPI. Since neither the U.S. nor the Canadian CPI indices appropriately reflect this quality decline, part of the measured decline in the real rent is simply a reflection of the decline in the real quality of housing services being priced. Ozanne (1981) and Lowry (1981) have shown that the rental component of the CPI in the U.S. had a downward bias of between 0.6 per cent and 0.7 per cent a year between 1967 and 1980 as a result of unmeasured depreciation. In contrast, a comparison of a revised user cost CPI for homeowners and renters for Canada by McFadyen and Hobart (1978) suggests no downward bias on the assumption that the user cost of housing services will be approximately equalized across tenure forms in the long run. Nevertheless, this downward bias is also likely to apply to Canada. The unmeasured depreciation estimated by Ozanne (1981) and Lowry (1981) would explain approximately one half of the decline in real rent between 1967 and 1980 in the U.S. and approximately one third of the decline between 1961 and 1975 in Canada.

A second explanation is that the CPI does not fully measure the rent paid by tenants since some tenants pay their own fuel and utility costs. Lowry (1981) has estimated this to lower the measured rate of rent increase by approximately 0.5 per cent a year between 1967 and 1980 in the U.S.

However, after adjusting for these biases approximately one-sixth to one-half of the measured decline in the real rent still remains. This remaining decline in real rent can to a large extent be explained by the shift in the relative user costs of homeownership and renting in favour of homeownership, as Hendershott (1980), Hendershott and Shilling (1981), Jaffee and Rosen (1979) and Rosen and Rosen (1980) have found significant increases in the relative demand for homeownership, and corresponding declines in the demand for rental housing, associated with the decline in the relative user costs of homeownership. The explanation for the relative decline in user costs of homeownership has been attributed in the U.S. to increased expectations of inflation and its interaction with the tax rate on the one hand, and to tax reform legislation in 1969 and 1976 which reduced the desirability of rental housing investment on the other hand.[20] Since Canada experienced similar increases in inflationary expectations, and introduced tax reform legislation in 1971 and thereafter considerably more favourable to homeownership, eg., the exemption of principal residences from capital gains taxation and the creation of the registered homeownership saving plan, and considerably more unfavourable for investment in rental housing, eg., the elimination of the tax shelter features of real estate investment, the full taxation of recaptured depreciation and the deemed partial realizations on death,[21] the decline in the relative user costs of homeownership were likely greater in Canada in the pre-control period than in the U.S.

An opposing view of the interrelationship between inflation and tenure choice (but not of tax changes and tenure choice) has been expressed by Kearl (1979) and Schwab (1982). They argue

that expectations of increased inflation create a "tilting" in the stream of real mortgage payments, increasing real payments in the early years and lowering them in later years, which reduces the demand for homeownership and, by inference, increases the demand for and price of rental housing services. Although the "tilting" of mortgage payments likely constrained the shift away from rental housing, the net effect of increasing inflationary expectations was likely to increase the demand for homeownership.[22]

The complexity of the issues affecting the relationship between the measured rate of rent increase and the rate of inflation makes it difficult to determine the appropriate relationship to be extrapolated. However, the impact of some variables is relatively clear. First, since the actual increase in the rent on rent controlled units is calculated for units likely to have experienced at least the normal rate of deterioration, no adjustment is necessary to account for normal deterioration. To the extent that there was rent control induced deterioration, the measured historic relationship would overstate, not understate, the appropriate increase in rent. Although a rent control induced quality deterioration is likely,[23] we have assumed no such deterioration in this analysis. Second, the more rapid increase in fuel and utility costs than in the CPI during the control period implies that to the extent that tenants were directly responsible for these costs, the historic relationship between measured rent increases and the rate of inflation would understate the appropriate increase in rent. However, since our survey indicated that in the vast majority of cases heat and utilities were included in the rent on rent controlled units, this effect is unlikely to be large.

Third, since inflationary expectations increased during the majority of the rent control period it is likely that the relative user cost of homeownership declined between July 1975 and November 1982. However, since relative user costs were largely unaffected by tax changes during the control period, and since inflationary expectations were declining at the end of this period,[24] the decline in the relative user cost of homeownership would likely have been relatively minor. Thus, the downward pressure on real rents from this influence would likely have been less than in the pre-control period. Finally, the sharp increase in mortgage rates in the early 1980's would likely have increased the impact of the "tilt" problem in the latter part of the control period.

Consequently, some but not all of the forces causing the rate of increase in the measured rent to be lower than the rate of inflation in the pre-control period are applicable to the control period, and hence the rate of increase in rent in the absence of controls would have been lower than the rate of inflation, but likely not as much lower as in the pre-control period. Although the measured increase in rents in the U.S. between 1960 and 1980 was 60.3 per cent of the increase in the overall CPI, and in Canada between 1961 and 1975 was 40.1 per cent of the increase in the overall CPI, we have assumed the increase in the equilibrium rent in the absence of controls would have been approximately 85.0 per cent of the increase in the overall CPI, with virtually all of the difference between the increase in rent and the increase in the overall CPI being accounted for by the unmeasured normal rate of deterioration in rental housing services.[25]

The application of the appropriate proportion of the increase in the overall CPI to predict the increase in rents in the absence

of controls assumes that rents were at their equilibrium level at the inception of rent controls in 1975. However, this is unlikely. Between 1971 and 1974 the vacancy rate in the Toronto CMA declined continuously from 3.6 per cent to 1.1 per cent, before rising to 1.8 per cent in 1975. Since the vacancy rates of 1.1 per cent in 1974 and of 1.8 per cent in 1975 were considerably below the natural vacancy rate,[26] the rental housing market in the Toronto CMA was likely in a state of excess demand, and the rental price was likely below equilibrium. Consequently, a rent increase in excess of that normally associated with the rate of inflation could be expected to have occurred in the absence of rent controls.

In an attempt to measure this increase, the real rent increase necessary to restore equilibrium was estimated from two empirically implemented versions of equation (11) for Toronto, and this estimated increase was added to the increase predicted by the relationship between rent increases and the inflation rate to determine the increase in the equilibrium rent in the absence of rent controls.

The first empirically implemented version of the model is taken from Smith (1974). The model was estimated over the 1961-71 period for Toronto, and is set out in equation (12)

$$\dot{R} = 4.95 - .582\,V' - .291\,V_{-1} \qquad (12)$$

This model indicates an additional real rent increase of 3.58 per cent was required to restore equilibrium to the rental housing market in 1975.

The second empirically implemented version of the model is taken from Arnott (1981). The model was estimated over the 1963-75 period for Toronto, and is set out in equation (13)

$$\ln R = .541 - .782 \ln V_{-1} + .654 \ln P_{-1} \qquad (13)$$

This model indicates an additional real rent increase of 1.59 per cent was required to restore equilibrium to the rental housing market in 1975.

The increase in rent that could be expected to have occurred between July 1975 and November 1982 in the absence of rent controls is thus

$$(1.0358)(1+(98.8)(.85)) - 1 = 90.6\ \%,$$

if the real rent increase required to restore equilibrium in 1975 is taken from equation (12) and if the increase in the equilibrium rent in the absence of rent controls is taken to be 85 per cent of the increase in the overall CPI, since the increase in the overall CPI between July 1975 and November 1982 was 98.8 per cent. The increase in rent that could be expected to have occurred in the absence of rent control would be 105.9 per cent if the increase in the equilibrium rent were taken to be the same as the increase in the CPI, with no adjustment to reflect unmeasured quality deterioration.

2. Increase in the Index of Uncontrolled Rents Under Rent Review

In order to determine the actual increase in the index of uncontrolled rents under rent review, i.e., the increase in the imputed uncontrolled (hedonic) price of housing services during the rent control period, the actual increase in the average rent on rent controlled units during the rent control period must be calculated. The most straightforward approach would be to compare the 1975 pre-control rents with the 1982 rents on rent controlled dwellings. This approach, however, cannot easily be implemented

because our rent measure for 1975 and 1976 (and until 1979) is the asking rent for vacant units. Since, in an uncontrolled market, rents are often increased as units are vacated and the asking rent occasionally exceeds the final contract rent, the 1975 measure of rents is substantially higher than the average rent. The use of the 1975 rent for vacant apartments as the base for the calculation of the increase in the average rent is thus inappropriate without a difficult to estimate adjustment for the vacancy premium. Moreover, even if such an adjustment were made, further substantial adjustments would be necessitated by the large differences between 1975 and 1982 uncontrolled housing characteristics. Rather than attempt these adjustments the increase in the average rent on rent controlled units was calculated as the sum of three increases:

(i) the increase that would occur if all rents were increased at the statutory annual maximum rate for controlled rent increases,

(ii) the increase in excess of the statutory annual maximum increase resulting from an order of the Residential Tenancy Commission (or its predecessor), and

(iii) illegal rent increases.

Between July 1975 and November 1982 the cumulative statutory annual maximum rent increase permitted under rent review on a pro rated basis was 60.0 per cent, since the statutory annual maximum increase was 8.0 per cent until October 1977, and was 6.0 per cent thereafter.[27]

In order to determine the increase in excess of the statutory annual maximum resulting from orders of the Residential Tenancy Commission (or its predecessor), the average percentage increase awarded by the commission and number of units affected by the awards were calculated for each year for Metropolitan Toronto. The weighted average of the excess of residential tenancy awards over the statutory maximum was determined and this was applied to the total number of units affected

to determine the average excess award, as set out in Table Eight. This was then converted to an increase in the average rent for all rent controlled units by dividing by the number of units under rent control in Metropolitan Toronto. This calculation is set out below.

$$\text{percentage increase in the average rent controlled rent attributable to residential tenancy commission awards} = \left(\frac{\text{no. of units receiving awards}}{\text{total rent controlled units}}\right) \times \left(\text{excess of award over statutory maximum increase}\right)$$

$$= \left(\frac{220,384}{201,173}\right) 5.48\%$$

$$= 6.0\%$$

The number of rent controlled units in Metropolitan Toronto was extimated by assuming the proportion of rent controlled units in Metropolitan Toronto was the same as the proportion of rent controlled to total privately initiated rental apartment structures of 6 units and over in the sample of rent and vacancies conducted by Canada Mortage and Housing Corporation for the Toronto CMA (the "sample"), i.e., $\frac{157,555}{174,365}$; and assuming the ratio of the total number of rental apartment structures of 6 units and over in the sample for Metropolitan Toronto to the total in the sample for the Toronto CMA, i.e., $\frac{174,365}{212,159}$, is the same as the ratio of the actual total of rental apartment structures for Metropolitan Toronto to the total universe of rental apartment structures for the Toronto CMA[28], where the total universe of rental apartment structures for the Toronto CMA is 270,894 units.[29] The estimated number of rent controlled units in structures of 6 units and over in Metropolitan Toronto is thus calculated as:

TABLE EIGHT

Calculation of the Percentage Increase in the Average Rent Controlled Rent Attributable to Awards of the Residential Tenancy Commission

Period	Metropolitan Toronto				Ontario
	number of apartment units	percentage increase awarded	statutory maximum increase	excess of award over statutory maximum	percentage increase awarded
	(Units)	(%)	(%)	(%)	(%)
12 months ending					
Dec. 1976	58,404	12.32	8.0	4.32	12.56
Dec. 1977	19,217	11.88	8.0	4.21	12.52
Dec. 1978	23,730	9.05	7.67**	3.05	9.71
Dec. 1979	10,188	10.56	6.0	4.56	11.19
3 months ending					
March 1980	11,056	9.90	6.0	3.90	10.74
12 months ending					
March 1981	20,052	10.89	6.0	4.89	11.55
March 1982	39,178	13.93	6.0	7.93	14.73
8 months ending					
Nov. 1982*	38,559	13.87	6.0	7.87	14.19
total units	220,384				
weighted average				5.48	

* The number of apartment units is taken as 2/3 of the 51,412 total for the year ending March 1983. The percentage increase awarded for the period is assumed to be the same as for the entire year.

** Calculated as 8 per cent for 10 months and 6 per cent for 2 months.

Source: Rental Tenancy Commission, Report to the Minister, 1982-83, and earlier issues.

$$\text{estimated number of rent controlled units} = \left(\frac{157,555}{174,365} \times \frac{174,365}{212,159}\right) \times 270,894$$

$$= 201,173 \text{ units.}$$

Although it is likely that some illegal rent increases have occurred, we assume full compliance with the legislation in our calculations, and hence make no adjustments for illegal rent increases. This likely introduces a downward bias in the calculated increase in the average rent on rent controlled aprtments.[30] On the other hand, we also assume that in the absence of a higher Residential Tenancy Commission award, the rent on every rent controlled apartment was increased by the statutory annual maximum, which likely introduces an upward bias in the calculated increase.

The actual increase in the average rent on rent controlled units during the rent control period to November 1982 is thus calculated as

$$(1.06)(1.60) - 1 = 69.6\% \ .$$

Since no adjustment for normal unmeasured quality deterioration was made in the calculation of the predicted rent increase in the absence of controls no adjustment is required here for this deterioration. However, if rent controls induce additional quality deterioration, an upward adjustment should be made since the comparable predicted rent increase in the absence of controls would be based on a lower rate of quality deterioration. Although Arnott (1981) and Smith and Tomlinson (1981) indicate such an induced quality deterioration is likely, no adjustment is made for this, which introduces a downward bias in the calculation of the actual increase in the average rent on rent controlled units.

In order to determine the actual increase in the index of uncontrolled rents under rent review the difference between the 1982 uncontrolled hedonic price of 1982 rent controlled housing services and the actual 1982 controlled rent for these services must be added to the actual increase in the rent for rent controlled units. The price indices calculated in Section 3 indicate that uncontrolled rents were 14 per cent to 27 per cent higher than controlled rents for equilavent housing services in November 1982, with the preferred measure being approximately 24 per cent.[31] Consequently, the calculated increase in uncontrolled rents in Metropolitan Toronto under the Ontario rent review regime between July 1975 and November 1982 is

$$(1.696)(1.24) - 1 = 110.3\% ,$$

using our preferred measure of the differential between controlled and uncontrolled rents, and is

$$(1.696)(1.215) - 1 = 106.1\%,$$

using the average (21.5 per cent) of the six measures of the differential between controlled and uncontrolled rents.

3. Comparison of the Predicted Increase in Rents in the Absence of Controls with the Actual Increase in Uncontrolled Rents

The comparison of the predicted increase in rent in the absence of controls with the actual increase in the index of uncontrolled rents under rent control supports our second prediction, that the uncontrolled rent under a rent control regime will exceed the rent that would have occurred in the absence of controls.

The actual increase from July 1975 to November 1982 in the index of uncontrolled rents for Metropolitan Toronto under the rent review regime using our preferred measure of the differential between

controlled and uncontrolled rents was 110.3 per cent. This increase considerably exceeds the predicted rent increase in the absence of controls, since the rent for equivalent housing services in the absence of controls was predicted to increase 90.6 per cent. Thus, uncontrolled rents in Metropolitan Toronto are approximately 10.3 per cent ($\frac{210.3}{190.6}$ - 1) higher than they would have been in the absence of rent controls.[32] Moreover, if the biases remaining in the calculation were removed, the calculated differential would likely be increased. For example, if the impacts of illegal rent increases and rent controlled induced quality deterioration were included, the increase in the index of uncontrolled rents would be higher, and the rent differential would be higher. Furthermore, even if it is assumed that there would have been no deterioration in the quality of housing services provided by the controlled housing stock, and that measured real rent would have remained constant, the increase in the index of uncontrolled rents exceeds the predicted increase in rent in the absence of controls of 105.9 percent, although the difference is insignificant when the rent differential between uncontrolled and controlled rents is measured by the average of the six indices and it is assumed that there are no illegal rent increases or rent control induced quality deterioration.

On the other hand, on the assumptions incorporated in our primary calculation, rents in Metropolitan Toronto controlled under rent review are approximately 11.0 per cent ($\frac{169.6}{190.6}$ - 1) lower than they would have been in the absence of rent controls.[33]

5. RATIONING OF CONTROLLED HOUSING

A critical part of analysing how rents in the controlled and uncontrolled sectors were established (see Section 2) was the mechanism of rationing the controlled housing stock. This helped to establish how much excess demand spilled over into the uncontrolled market. Unlike markets for non-durable goods, the rental housing market offers strong a priori hypotheses about the rationing of controlled housing. Those tenants occupying the units at the time controls are imposed will in the short run enjoy the controlled stock. New entrants to the community or newly formed households will be forced into the uncontrolled market. Sitting tenants will leave the controlled market if their utility is higher in the uncontrolled market. The price is higher in the uncontrolled market so those who leave will tend to be those with a strong desire to increase their housing consumption or to change their location. It is rather more difficult to predict what sort of households will occupy the vacated controlled units. If there is excess demand in the controlled market landlords can ration units and presumably they will favour 'desirable' tenants such as households without children, or households which are likely to stay longer (older households) or high income households. On the other hand, since prices are higher on uncontrolled units and the number of units of housing service per dwelling unit is larger in uncontrolled units, relatively higher income persons will tend to enter the uncontrolled market. This tendency would be reinforcedif there is a high income elasticity of demand for newness.

In order to test these rationing hypotheses a complex longitudinal survey much beyond the scope of the survey used in this research is required. Consequently, our analysis of the various characteristics of the households in the two sectors is somewhat impressionistic.

The demographic characteristics of households in the controlled and the uncontrolled markets are presented in Table Nine. These data and those of subsequent tables are based on the entire sample rather than the subsample used in the regression equations of Section 3.

The first impression of Table Nine is that there are not major differences between the sectors. Households in the uncontrolled sector tend to be slightly larger and are more likely to have children (although few renters in either market have children). The heads of households in the uncontrolled sector tend to be younger (and are much less likely to be elderly), and are more likely to be male headed and more likely to be married. The greater likelihood of young children, of a younger head of household and of a married head of household all offer some indirect evidence that new or expanded households are more likely to be in the uncontrolled market. The data also give some support for the hypothesis that households with young heads and households with children will be rationed out of the controlled market.

Table Ten presents the distribution of household income in the two markets. Average income is about 22 per cent higher in the uncontrolled market, and 33.0 per cent of the households in the controlled market have annual incomes below $15,000 compared to 19.0 per cent of the households in the uncontrolled market. Table Eleven indicates that much of the income difference is concentrated in households headed by the elderly, as 9.3 per cent of households in controlled housing earn below $15,000 and have a head 65 or over compared to only 3.9 per cent of households in uncontrolled housing (for 55 and over the respective figures are 12.0 per cent and 5.9 per cent). Table Twelve

Table Nine

Household Composition
Controlled and Uncontrolled Markets

Variable	Controlled	Uncontrolled
Number in Household		
1	43%	29%
2	35	41
3	12	13
4+	10	17
Mean	1.9	2.2
Number of Children Aged 0-4		
0	92%	88%
1	7	10
2+	1	2
Mean	.095	.143
Number of Children Aged 5-15		
0	90%	83%
1	7	10
2+	3	7
Mean	.146	.249
Age of Household Head		
≤ 29	32%	39%
30-39	23	28
40-49	9	13
50-59	12	10
60-69	13	5
70+	11	5
Mean	43	37
Sex of Household Head		
Male	58%	67%
Female	42	33
Marital Status of Household Head		
Married	35%	47%
Common law/living together	8	9
Separated/Divorced	15	15
Widowed	11	4
Never married	31	25

Table Ten

Distribution of Household Income
Controlled and Uncontrolled Markets

Income Range ($)	Controlled (%)	Uncontrolled (%)
< 5,000	4	3
5,001-10,000	11	6
10,001-15,000	18	10
15,001-20,000	18	15
20,001-25,000	17	18
25,001-30,000	11	15
30,001-35,000	9	10
35,001-40,000	4	9
40,000+	8	14
Mean[1]	$21,936	$26,716

1 The data were gathered by income range. The mean was computed assuming all observations were the mid-point of the range, that income in the open-ended bottom category was $5,000 and income in the open-ended top category was $65,000. Data were available by $5,000 ranges to $60,000, although not shown in the Table.

Table Eleven

Distribution of Low Income Households by Age of Household Head
Controlled and Uncontrolled Markets

Household Age	Percentage of Households Earning Below $15,000		Percentage of Total Households Earning Below $15,000 and Aged	
	Controlled	Uncontrolled	Controlled	Uncontrolled
	%	%	%	%
≥ 65	28.2	20.6	9.3	3.9
55-64	8.3	10.4	2.7	2.0
45-54	5.7	10.5	1.9	2.0
35-44	12.3	12.8	4.1	2.4
25-34	24.7	25.7	8.1	4.9
≤ 24	20.8	20.0	6.9	3.8
total	100.0	100.0	33.0	19.0

indicates that the income difference is also partially explained by the higher percentage of single person (and hence likelihood of single income) households in controlled housing, since 51.7 per cent of households earning below $15,000 in controlled housing are one person households compared to 39.4 per cent in uncontrolled housing.

The theory on income distribution pointed in two directions. It indicated that, on the one hand, landlords would prefer to ration controlled stock to high income households; but, on the other hand, high income households are more likely than low income households to be able to increase their utility by moving to the uncontrolled sector, and to have a large positive income elasticity of demand for newness. The data suggest the latter factors predominate, although the higher income of households in uncontrolled housing also reflects the smaller proportion of elderly (10 per cent versus 24 per cent over age 59) and of single person (43 per cent versus 29 per cent) households in uncontrolled housing.

Table Thirteen indicates the recent movements of households in each market. Somewhat surprisingly, 70 per cent of households in the controlled sector moved in after rent controls were imposed, and twenty-three per cent have moved twice or more since July 1, 1979. Although it is usually assumed that there is little turnover in the controlled sector because of excess demand and low observed vacancy rates, the data indicate considerable movement, both within the controlled market and from the uncontrolled to the controlled market.[34] This movement may have been facilitated by government homeownership incentive programs and high inflationary expectations which could have induced younger family households to shift their tenure form to

Table Twelve

Distribution of Low Income Households by Size of Household
Controlled and Uncontrolled Markets

Size of Household persons	Percentage of Households Earning Below $15,000		Percentage of Total Households Earning Below $15,000 and of Size	
	Controlled	Uncontrolled	Controlled	Uncontrolled
	%	%	%	%
1	51.7	39.4	17.1	7.5
2	31.3	35.4	10.3	6.7
3	8.7	15.7	2.9	3.0
4 or more	8.3	9.5	2.7	1.8
total	100.0	100.0	33.0	19.0

Table Thirteen

Household Movement
Controlled and Uncontrolled Markets

Measure of Movement	Controlled	Uncontrolled
Year Head moved into Apartment		
1976 or before	30%	3%
1977	7	1
1978	6	2
1979	9	13
1980	13	19
1981	14	29
1982	21	34
Mean years in apartment	6.0	2.5
Number of moves since July 1979		
0	47%	10%
1	30	56
2	13	18
3	6	10
4+	4	6
Mean	.91	2.0
Tenure of Head's Previous Dwelling		
Owned	17%	26%
Rented	83	74
Control Status of Previous Rental Tenure		
Controlled	36%	41%
Uncontrolled	36	35
Don't know	28	24
Location of Previous Dwelling		
Toronto CMA	81%	73%
Outside Toronto CMA	19	27

homeownership, thereby freeing rent controlled apartments. This movement might also have been facilitated by the interaction of the rent review regulations with high and rising interest rates. High interest rates substantially increase the likelihood of "financial loss" on newly purchased rent controlled buildings, and rising interest rates generate financing cost increases, both of which are likely to justify rent increases on rent controlled buildings in excess of the statutory annual maximum increase. This latter argument would also explain the much higher turnover on controlled than uncontrolled units in 1982 when rent increases would reflect the 1981 peak in interest rates.

Nevertheless, the turnover on rent controlled units was likely much lower than on uncontrolled units, since 47 per cent of the occupants of controlled units did not move between July 1979 and November 1982, compared to only 10 per cent of the occupants of uncontrolled buildings. Furthermore, the mean number of moves between July 1979 and November 1982 associated with the tenants currently in rent controlled units was only .91 compared to 2.0 for tenants currently in uncontrolled units.

A higher percentage (27 compared to 19) of households in uncontrolled than in controlled units also moved from outside the Toronto Census Metropolitan Area, which supports the hypothesis that new entrants are more likely to be rationed into the uncontrolled market.

Table Fourteen presents data relating to new household formation at the time a household moved. A new household could be formed if someone was left behind in the previous dwelling. There is no difference between the markets on this basis. Alternatively, a new household could be formed if someone not from the previous dwelling came into the current dwelling. The uncontrolled market had

Table Fourteen

Formation of New Households with a Move

Controlled and Uncontrolled Markets

Measure	Controlled	Uncontrolled
(i) Everyone from previous dwelling moved to current dwelling		
Yes	59%	59%
No	41	41
(ii) Anyone not from previous dwelling moved to current dwelling		
Yes	23%	28%
No	77	72
(iii) Move created a new household		
No (Yes to (i) and No to (ii))	48%	46%
Yes (other answers to (i), (ii))	52	54

slightly more such new households. Consequently, there was a slightly higher percentage of newly formed households associated with movement into uncontrolled housing than into controlled housing.

Although the evidence which can be assembled is somewhat impressionistic, it seems to indicate considerable turnover in the controlled market and between markets. Nevertheless, the turnover associated with controlled housing seems significantly below that associated with uncontrolled housing. The evidence also seems to support the rationing mechanisms postulated in Section 2; namely, that tenants in controlled housing at the time rent controls are imposed tend to retain the controlled housing units; that new entrants, newly formed households, young households and households with children tend to be rationed into the uncontrolled market; that average household income is higher in the uncontrolled market, but that a substantial proportion of the occupants of rent controlled housing have above average incomes and a substantial proportion of the occupants of uncontrolled rental housing have below average incomes.

6. CONCLUDING REMARKS

This paper has been devoted to exploring the effects of rent controls with an exemption for units constructed after controls were imposed. Such a regime creates two rental markets: a controlled and an uncontrolled market. Both the theory and the empirical work suggest that uncontrolled rents are higher than controlled rents and that uncontrolled rents are higher than rents would have been in the absence of controls. This has obvious important implications for the analysis of the effects of rent controls.

A normative analysis of controls usually looks at, what might be broadly termed, the effects of controls on efficiency and equity. Efficiency costs occur because prices in both markets diverge from the price in the absence of controls. Often inefficiency is highlighted by comparing the level of housing stock under controls with that which would exist with an efficient (non-controlled) allocation of resources. The usual analysis only considers the effects on maintenance, demolition and conversion. This analysis also highlights new construction issues. Since rents in the uncontrolled market tend to be higher than they would have been in the absence of controls, one might think they would tend to encourage new supply. However, the effect of controls in one sector of the market on the expectations of builders must also be considered, and makes it likely that controls will reduce the equilibrium incremental stock of housing.

The equity effects of controls include their effects on the distribution of income, the housing consumption and the security of tenure of tenants. Our analysis indicates that some tenants will

suffer a loss of real income as a result of rent controls because they will be forced into the uncontrolled rental housing market. These households tend to be new entrants, newly formed households and households with children. They also tend to have higher incomes than households in controlled housing (partially because there are relatively fewer single person and elderly households in uncontrolled rental housing). The effects on housing consumption are hard to generalize. If a household can move within the controlled market it may increase its housing consumption, but if it must move to the uncontrolled market it will reduce its housing consumption compared to the situation without controls. Overall consumption is reduced because the total stock is reduced by controls, but the new construction exemption likely mitigates this.

This research suggests that important directions for future work are the examination of the rationing mechanism using a longitudinal survey and the examination of the formation of expectations by builders. Both of these require theoretical work and data beyond those generated here. However, considerable other work can be done using the data from this survey. The survey is rather rare in that it was especially designed for hedonic price analysis. Further analysis could be done on the hedonic price function. Other functional forms could be examined, and detailed exploration of two of the most problematic variables, accessibility and neighbourhood quality, could be undertaken (1981 census tract variables could be easily added). Finally, the publicly-assisted market was not examined at all. Its hedonic price function and the characteristics of its tenants could be compared with the other two markets.

NOTES

1 For a detailed discussion of the objectives of government intervention in housing matters and of whether controls are the most desirable instrument of intervention see Fallis (1983).

2 See Frankena (1975) for a discussion.

3 Gould and Henry (1967) analysed the effect of price control on the price of a substitute. This analysis is not directly applicable to rent controls because households cannot consume both the controlled good and the uncontrolled substitute as assumed by Gould and Henry. In the housing market, households must choose a dwelling unit either in the controlled or the uncontrolled market.

4 Other changes are also made quite often, for example permitting landlords to increase rents to cover cost increases.

5 This analysis is based on Fallis and Smith (forthcoming). That paper also considers a vacated unit exemption and examines data from Los Angeles which confirms the prediction of the model that rents in the uncontrolled sector are higher than they would have been in the absence of controls.

6 This representation assumes that controls actually set the price of housing services, that there are no side payments, and abstracts from any issues of the quality of housing stock.

7 See Smith (1984) for a discussion of factors affecting household headship rates.

8 Marks (1982) discusses the effects of rent controls with an exempt sector, although he does not model precisely how the demand and supply curves in the two sectors are established. His diagrams indicate that uncontrolled rents will be greater than controlled rents and greater than rents in the absence of controls. However, later in the paper he suggests that in certain circumstances uncontrolled rents are a good proxy for rents in the absence of controls.

9 The pioneers of this more general approach are Becker (1965), Lancaster (1966) and Muth (1966).

10 Halvorsen and Pollakowski (1981) use a very general functional form, which yields the often-used functional forms as special cases, and show that the often-used forms can be rejected.

11 The difference in hedonic prices can be due to differences in the functional form of the hedonic price function or due to differences in the parameters of price functions of similar form.

12 The distance was calculated as the distance from the centre of the census tract in which the building was located to the City Hall, Toronto.

13 The pooled regression was run on unweighted data although there were more controlled than uncontrolled observations and the controlled sample was a much smaller fraction of the controlled universe than the uncontrolled sample was of its universe. The maintained hypothesis of the pooled regression was that the functional form of the hedonic price function was the same in the two markets except for a constant.

14 Jazairi attempted to deal with the multi-collinearity problem through stepwise regressions, principal components regressions and ridge regressions. None of these techniques could entirely get rid of the problem and the coefficients estimated did not differ significantly under the three approaches. See Jazairi (1983) for further details.

15 These regressions were run on unweighted data.

16 The interpretation is considerably simplified if rent controls proportionately depress the price of the housing characteristics in the controlled sector.

17 In a similar sort of study of the Vancouver housing market, Marks (1983), found also that separately estimated hedonic equations revealed different parameters in the two sectors and that characteristic prices were higher in the uncontrolled sector. The results can be used to compute Index I, evaluated at the mean of the variables. For the linear equations the index is 1.56 and for the semi-log 1.34. In Vancouver, uncontrolled units, at the mean, have less of the desirable characteristics.

18 Canada Mortgage and Housing Corporation (1982), p. 17.

19 Moreover, since the vacancy rates for the Toronto CMA were 0.5 per cent and 0.3 per cent in 1980 and 1981 respectively, it is likely a queue was in existence for some time, making the determination of its size uncertain.

20 The 1969 legislation introduced a minimum tax to be applied to capital gains and accelerated depreciation, and provided for partial recapture of accelerated depreciation. The 1976 legislation increased the minimum tax and established full recapture of accelerated depreciation. Hendershott (1981).

21 See Smith (1977) and (1981).

22 See, for example, Dougherty and Van Order (1982).

23 See Arnott (1981).

24 This is reflected in the decline in the nominal rate of interest, eg., the long term Government of Canada bond yield declined from over 15 per cent in the summer of 1981 to 12.18 per cent in November 1982, on the assumption that the real rate of interest did not decline substantially over this period.

25 Ozanne (1981) and Lowry (1981) indicate unmeasured depreciation to have biased the rent index in the U.S. by 0.6 per cent to 0.7 per cent.

26 See Smith (1974) for an estimate of the natural vacancy rate for Toronto.

27 This reflects annual increases of 8 per cent for the first two years, 6.5 per cent for the third year (an increase of 8 per cent was permitted for 3 months and 6 per cent for 9 months), 6 per cent for the next 4 years, and 2 per cent as the pro rated portion

of the increase for the 4 months ending November 1982.

28 Canada Mortgage and Housing Corporation, Toronto Region (1983) supplied by Canada Mortgage and Housing Corporation, Toronto region.

29 Canada Mortgage and Housing Corporation (1982), p. 17.

30 An additional downward bias is introduced in the measure of the actual rent increase because the calculation ignores rent increases that will be applied retroactively to November 1982 rent as a result of rent review hearings held after November 1982. However, since our survey only captures those increases in effect in November 1982, this bias does not affect our calculations.

31 Index II and the pooled results indicate the difference between controlled and quality adjusted uncontrolled rents to be between 24 and 27 per cent.

32 Using the increase in the index of uncontrolled rents of 106.1 per cent, based on the average differential between controlled and uncontrolled rents, uncontrolled rents are approximately 8.1 per cent $(\frac{206.1}{190.6} - 1)$ higher than they would have been in the absence of rent controls.

33 The inverse of this, or 12.4 per cent $(\frac{190.6}{169.6} - 1)$, should not be taken as a prediction of the increase in rents if rent controls were to be removed because rent controls have affected a variety of factors, such as the supply of rental housing, tenure preferences and the natural vacancy rate, which are not reflected in this measure.

34 The high degree of movement within and between sectors makes the rationing mechanism difficult to detect.

APPENDIX A

SURVEY RESEARCH CENTRE
YORK UNIVERSITY

November 1982

Project 477

Rent Control Survey

The Survey Research Centre at York University is conducting a survey of apartment renters in and around the Toronto area. We would appreciate your cooperation in completing this questionnaire. Any adult member of the household may fill out this questionnaire.

Please do not put your name on the questionnaire. The survey is completely confidential.

Thank you for helping with this survey.

PLEASE USE THE BOX OR LINE NEXT TO EACH QUESTION TO RECORD YOUR ANSWER.

1. How many rooms are in your apartment? . . . . . ☐
   (Include kitchens, bedrooms and all other finished rooms. Do not include bathrooms, halls, vestibules, or dining areas not separated from the living room by a wall.)

2. How many bedrooms are in your apartment?. . . . . ☐
   (Include all rooms designated as bedrooms, even if they are only occasionally used, such as spare bedrooms. Do not include bed sitting rooms and other rooms used only as bedrooms at night. Bachelor, and studio apartments would have 0 bedrooms.)

3. What is the total floor area of your apartment? *(In square feet.)* . ☐☐☐☐

4. How many bathrooms are in your apartment? . . . . . ____
   (A room with a sink and toilet only, counts as 1/2 bathroom.)

5. What floor is your apartment on? (basement, ground, 1st, 2nd, etc.). . . . . _____

6. How attractive is the view from your apartment?

Very Attractive	Attractive	Unattractive	Very Unattractive
☐1	☐2	☐3	☐4

20092

7. What type of floor do you mostly have in your apartment?

Wood	Vinyl	Carpet	Other
☐1	☐2	☐3	☐4

8. Is there a separate thermostat for your apartment?

Yes ☐1 No ☐2

9. Is there a functioning fireplace in your apartment?

Yes ☐1 No ☐2

10. How would you rate the landscaping and exterior appearance of your building?

Very Good	Good	Fair	Poor	Very Poor
☐1	☐2	☐3	☐4	☐5

11. How would you rate the area around your building? For example, are there noisy streets, railway tracks or industrial activities that cause noise and pollution of the air? Would you rate the area as...

Very Good	Good	Fair	Poor	Very Poor
☐1	☐2	☐3	☐4	☐5

12. How would you rate the interior maintenance of your building (halls, stairwells, etc.)?

Very Good	Good	Fair	Poor	Very Poor
☐1	☐2	☐3	☐4	☐5

13. Does your apartment building have...

	Yes	No
a. a doorman?	☐1	☐2
b. an elevator?	☐1	☐2
c. an intercom?	☐1	☐2
d. a superintendent who lives in the building?	☐1	☐2
e. a play area either inside or outside the building?	☐1	☐2
f. a sitting space either inside or outside the building?	☐1	☐2

14. Are there any rent-geared-to-income tenants in your apartment building?

Yes ☐1 No ☐2 Don't Know ☐8

15. Is your building an adult only apartment building?

Yes ☐1 No ☐2 Don't Know ☐8

16. How far is it to the nearest subway station?

☐1 less than 1/8 mile (about 1 city block or less)
☐2 1/8 to 1/4 mile (about 1 to 2 city blocks)
☐3 1/4 to 1/2 mile (about 2 to 4 city blocks)
☐4 1/2 to 1 mile (about 4 to 8 city blocks)
☐5 over 1 mile (over 8 city blocks)

17. How far is it to the nearest transit stop (bus or streetcar) that will connect you to the subway without transferring?

☐1 less than 1/8 mile (about 1 city block or less)
☐2 1/8 to 1/4 mile (about 1 to 2 city blocks)
☐3 1/4 to 1/2 mile (about 2 to 4 city blocks)
☐4 1/2 to 1 mile (about 4 to 8 city blocks)
☐5 over 1 mile (over 8 city blocks)

18. How far is it to the nearest supermarket?

☐1 less than 1/8 mile (about 1 city block or less)
☐2 1/8 to 1/4 mile (about 1 to 2 city blocks)
☐3 1/4 to 1/2 mile (about 2 to 4 city blocks)
☐4 1/2 to 1 mile (about 4 to 8 city blocks)
☐5 over 1 mile (over 8 city blocks)

19. How far is it to the nearest park?

☐1 less than 1/8 mile (about 1 city block or less)
☐2 1/8 to 1/4 mile (about 1 to 2 city blocks)
☐3 1/4 to 1/2 mile (about 2 to 4 city blocks)
☐4 1/2 to 1 mile (about 4 to 8 city blocks)
☐5 over 1 mile (over 8 city blocks)

20. How much was the rent for this apartment for the month of October 1982? *(Include in your rent all charges you pay to your landlord e.g. for parking, heating, water, electricity, cable T.V., furnishings, etc. If you share the rent please enter the total rent not just your share.)* $ ☐☐☐☐ /month of October

21. Which of the following services are provided for you by your landlord in return for the monthly rent? (Your rent includes all charges you pay to your landlord as in question 20.)

	Provided by landlord	Not provided by landlord
a) heating	☐1	☐2
b) water	☐1	☐2
c) electricity	☐1	☐2
d) air conditioning	☐1	☐2
e) refrigerator	☐1	☐2
f) stove	☐1	☐2
g) dishwasher	☐1	☐2
h) furniture/furnishings	☐1	☐2
i) laundry facilities	☐1	☐2

22. Does any of the rent you pay cover the cost of space used solely for business purposes? If yes, please give the amount of rent in October 1982 that was used for this purpose. $ ☐☐☐☐ /month of October

23. Is your apartment subject to rent controls?

Yes ☐1 No ☐2 Don't know ☐8

24. Are there recreational facilities (swimming pool, sauna, tennis courts, squash courts, etc.) in your apartment building?

No ☐1

Yes ☐2 ⟶ Do you have to pay an extra fee on top of your monthly rent in order to make use of these facilities?

No ☐1

Yes ☐2 ⟶ How much was this fee for the month of October 1982?

$ ☐☐☐☐ / month of October

25. Do you have Cable T.V. in your apartment?

No ☐1

Yes ☐2 ⟶ Do you pay Cable T.V. charges to the Cable Company or is Cable T.V. included in your monthly payment to your landlord?

paid to Cable Company ☐1

paid to/by landlord ☐2 ⟶ If you pay an explicit charge to your landlord for Cable T.V., how much was this charge for October 1982?

$ ☐☐☐☐ / month of October

26. Is parking available in your apartment building?

No ☐1

Yes ☐2 ⟶ Do you use the parking that is available?

No ☐1

Yes, indoor parking ☐2 ⟶ If you pay an explicit charge to your landlord, how much do you pay per month for parking?

$ ☐☐☐☐ / month of October

Yes, outdoor parking ☐3 ⟶ If you pay an explicit charge to your landlord, how much do you pay per month for parking?

$ ☐☐☐☐ / month of October

27. Is your monthly rent reduced for any reason?

No ☐1

Yes ☐2 ⟶ Is this because you...

	Yes	No
a. live in government subsidized housing?	☐1	☐2
b. give service to landlord?	☐1	☐2
c. have a longer lease?	☐1	☐2
d. or something else? *(Specify)*	☐1	☐2

_____

28. How many people are currently living in your apartment?. . . . . ☐☐

29. How many children are currently living in your apartment who are...

0 to 4 years of age?. . . . . ☐

5 to 15 years of age? . . . . . ☐

30. What is the total household income that your household received in the last 12 months, not just from wages but <u>from all sources</u>, before taxes and other deductions were made? Was it...

☐01 less than $5,000
☐02 between $5,000 and $10,000
☐03 between $10,001 and $15,000
☐04 between $15,001 and $20,000
☐05 between $20,001 and $25,000
☐06 between $25,001 and $30,000
☐07 between $30,001 and $35,000
☐08 between $35,001 and $40,000
☐09 between $40,001 and $45,000
☐10 between $45,001 and $50,000
☐11 between $50,001 and $55,000
☐12 between $55,001 and $60,000
☐13 over $60,000

THE REMAINING QUESTIONS REFER TO THE HEAD OF THE HOUSEHOLD. THE HEAD OF THE HOUSEHOLD IS THE PERSON WHO HAD THE LARGEST INCOME IN THE LAST 12 MONTHS. IF YOU ARE NOT THE HEAD OF THE HOUSEHOLD, ANSWER FOR HIM/HER AND NOT YOURSELF. IF YOU ARE UNSURE OF ANY ANSWER PLEASE CHECK WITH THE HEAD OF THE HOUSEHOLD.

31. What is the age of the head of the household? . . . . . ☐☐ years

32. What is the sex of the head of the household?

Male ☐1 Female ☐2

33. What is the marital status of the head of the household?

☐1 Married
☐2 Common-law or living together
☐3 Separated
☐4 Divorced
☐5 Widowed
☐6 Never married

34. When did the head of the household move into this apartment?

Month _____ 19☐☐

35. How many times has the head of the household moved since July 1, 1979? . . . . . ☐

36. Was the head of this household also the head of the household in his/her previous dwelling?

No ☐1

Yes ☐2 ⟶ Was the head of the household's previous dwelling owned or rented?

Owned ☐1

Rented ☐2 ⟶ Was the rented unit subject to rent control?

Yes ☐1 No ☐2 Don't Know ☐8

37. Where did the head of the household live before moving into this apartment?

_____ / _____

City/Municipality Province

38. Did everyone from the previous dwelling of the head of the household move into this apartment with him/her?

Yes ☐1 No ☐2 ⟶ Who did move from the previous dwelling?

_____

_____

39. Did anyone <u>not from the previous dwelling</u> of the head of the household move into this apartment with him/her?

Yes ☐1 No ☐2 ⟶ Who moved into this apartment who was <u>not</u> from the previous dwelling of the head of the household?

_____

_____

40. Please indicate which of the following were the two most important reasons why the <u>head of the household</u> moved from his/her previous dwelling. *(Rank the most important with a '1', the second most important with a '2', in the space provided.)*

a. ___ a less expensive dwelling was desired

b. ___ better neighbourhood conditions were desired

c. ___ a better quality dwelling unit was desired

d. ___ a larger dwelling unit was desired

e. ___ a smaller dwelling unit was desired

f. ___ a location closer to place of work, transportation, friends, etc. was desired

g. ___ the composition of the household changed (for example, the <u>head of the household</u> got married, the number of children increased, a non-family member moved in or out, etc.)

41. .....*IF* you ranked a change of household composition in Question 41 was this because...

	Yes	No
1. the number of children in the household increased	☐1	☐2
2. the number of children in the household decreased	☐1	☐2
3. the marital status of the household head changed: he/she was married.	☐1	☐2
4. the marital status of the household head changed: he/she was divorced or separated	☐1	☐2
5. the marital status of the household head changed: he/she became a widow or widower.	☐1	☐2
6. the number of non-family members increased. . . .	☐1	☐2
7. the number of non-family members decreased. . . .	☐1	☐2

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

PLEASE PLACE THE QUESTIONNAIRE IN THE POSTAGE-PAID ENVELOPE AND DROP IT IN THE MAIL.

Supplementary Neighbourhood Quality Questions

Is the building situated on a major thoroughfare?

1. Yes
2. No
3. No answer

Is the land use in the neighbourhood predominantly ...

1. Residential
2. Mixed Land Use
3. Park/Isolated Apartment Complex
9. No answer

If Residential - is this a...

1. High density neighbourhood
2. Medium density neighbourhood
3. Low density neighbourhood
9. No answer/not applicable

If Mixed Land Use...land use in the neighbourhood is...

1. Residential + high quality commercial
2. Residential + low quality commercial
9. No answer/not applicable

If Mixed Land Use....is this a.....

1. High density neighbourhood
2. Medium density neighbourhood
3. Low density neighbourhood
9. No answer/not applicable

If Park/Isolated Apartment Complex... How many apartment buildings?

1. One apartment building
2. Two to three apartment buildings
3. Four to six apartment buildings
4. Seven or more apartment buildings
9. No answer/not applicable

Would you rate the quality and maintenance of other buildings in the neighbourhood as...

1. Very good
2. Good
3. Fair
4. Poor
5. Very Poor
6. No answer

Rank the quality of this neighbourhood on a scale of one to five

1. Lowest quality
5. Highest quality
9. No answer

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